REPORT RESUMES

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EDUCATIONAL SPECIFICATIONS FOR THE SOUTH CAMPUS OF SEATTLE COMMUNITY COLLEGE.

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THE SOUTH CAMPUS IS ONE OF THREE PLANNED FOR SEATTLE COMMUNITY COLLEGE. A CONSULTANT GROUP WORKED WITH STAFF COMMITTEES IN DEVELOPMENT OF THE EDUCATIONAL SPECIFICATIONS FOR THIS FACILITY. AREAS CONSIDERED ARE SITE PLANNING AND DEVELOPMENT, AND FACILITIES FOR ADMINISTRATION AND FACULTY, STUDENT PERSONNEL SERVICES, COLLEGE CENTER, INSTRUCTIONAL RESOURCES CENTER, GENERAL CLASSROOMS, OCCUPATIONAL SUPPORTIVE COURSES, ADULT EDUCATION, PHYSICAL EDUCATION, AUDITORIUM PERFORMANCES, MUSIC, SPEECH AND DRAMA, ART, ENGINEERING TECHNOLOGY, SCIENCES, BUSINESS, PERSONAL SERVICES OCCUPATIONS, AUTOMOTIVE AND RELATED MECHANICAL OCCUPATIONS, AERONAUTICAL OCCUPATIONS, FOOD SERVICE OCCUPATIONS, METAL FABRICATION AND RELATED OCCUPATIONS, OCCUPATIONAL EXTENSION PROGRAMS, APPRENTICESHIP, AND CAMPUS OPERATIONS. DETAILED DESCRIPTIONS ARE PRESENTED FOR THE PROPOSED USE OF EACH FACILITY, WITH ATTENTION TO EQUIPMENT AND FURNITURE AS WELL AS TO BUILDING NEEDS. SPECIAL CONSIDERATION IS GIVEN TO THE INSTRUCTIONAL CENTER AND RESOURCES FOR THE AUDIOVISUAL MODE OF PRESENTATION. (WO)

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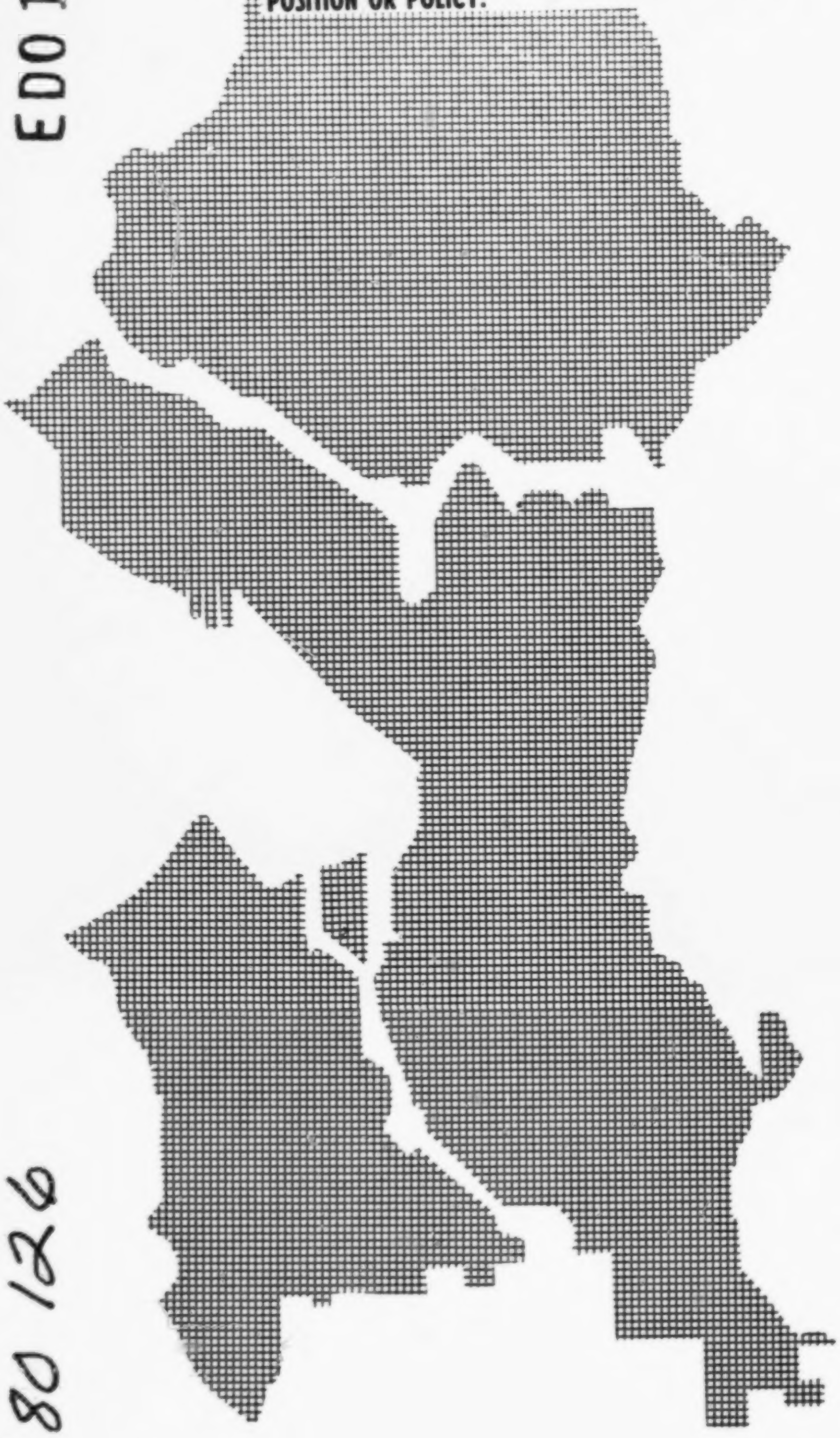

EDSPECS FOR THE SOUTH CAMPUS SEATTLE COMMUNITY COLLEGE

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October 29, 1966

Dr. Forbes Bottomly
Superintendent
Seattle Public Schools
815 4th Avenue North
Seattle, Washington 98109

Dear Dr. Bottomly:

We are pleased to submit to you the Report containing the Educational Specifications for the facilities proposed for construction at the South Campus of Seattle Community College. The final product is the result of considerable effort and time on the part of both the members of your staff and the Consultants. This Report purports to summarize basic curriculum and related decisions and presents a consensus on the basic requirements for facility needs. While it was humanly impossible to reflect in this Report each and every morsel of wisdom that was propounded in committee discussions, we do believe that the essence and intent of these discussions, for the most part, have been preserved.

This Report is another milestone in the process of planning the Seattle Community College. As the planning proceeded through this stage, there was evidence of the development of a more mature concept on the part of all as to what Seattle Community College is and should be and what purposes it should serve. Hopefully, this maturing process will continue to evolve better solutions to the myriad of problems that usually besets the planning and development of a large urban institution such as yours. We hope contributions of your Consultants to this process have fulfilled your greatest expectations.

We express our sincere appreciation to you and to your staff for the finest cooperation and assistance during the development and preparation of this Report.

Sincerely yours,

CWMcGuffey

C.W. McGuffey
Executive Director

CWM:lp

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CHAPTER I

INTRODUCTION

Purpose of the Study

This Report presents in written form a summary of the discussions and deliberations of more than 100 committee meetings of the faculty and staff of Seattle Community College and the Consultants. Included herein are the "educational specifications" for the South Campus. These edspecs are intended to represent, for the most part, a concensus of faculty, staff and consultants as to the physical requirements necessary for the full implementation of the total program of instruction and services to be offered by the South Campus of the Seattle Community College.

This Report more specifically purports to accomplish the following:

1. Review and summarize the philosophy and objectives of each major segment of the educational program of the College.
2. Review and summarize curricular implications for facilities.
3. Describe the general nature of the functions and activities of the various instructional and non-instructional functions to be accommodated by the College.
4. Describe the emerging concepts affecting each major segment of the instructional program of the College.
5. Estimate the kinds of facilities and the number needed to accommodate the program of instruction and services to be provided by the College.
6. Estimate the square footage requirements for the various types of facilities as guidelines to the architects.
7. Provide suggestions as to the amount and type of major items of furniture and equipment needed.
8. Describe the facilities that are determined to be needed.
9. Describe the desirable space relationships of facilities needed.
10. Prepare a schematic diagram of functional relationships of major space components.

Planning Dimensions

Several considerations established the conceptual framework for the preparation of the educational specifications. These considerations were conceptualized as planning dimensions and served to give general direction to the planning process.

The Long Range Plan

The basic guidelines for enrollments, number of rooms, and types of spaces as outlined in the long range plan for Seattle Community College established the upper limits for the planning committees. In some cases departures from these guidelines were justified and new limits were agreed upon. The long range plan projected a campus for 5,000 full-time equivalent students in the day program with an enrollment mix of 60 percent college parallel and adult general education and 40 percent occupational.[1]

A Comprehensive Community College

The planning group agreed that the comprehensive community college is essential to serve Seattle's needs for both out-of-school and post-high-school education. The agreed upon definition of a comprehensive community college was, "When all of these educational needs--occupational, college parallel, basic education, and community service--are being met on a single college campus, then that campus is 'comprehensive' in nature."[2]

A Multi-Campus Concept of Organization

Seattle Community College has been planned as a multi-campus college. The College's pattern of organization has been conceived as a multi-campus type of plan. Seattle School District, as the parent system, anticipates the operation of a single legal institution with three and ultimately more comprehensive campuses. A College President, equal in rank to a Deputy Superintendent of Schools, is responsible for the administration of the College and reports through the District Superintendent to the Board of Directors of Seattle School District. Campus heads will report to the President and will be higher in rank than the administrators on the President's staff.

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[1] Associated Consultants in Education, Inc., *Long Range Planning for Seattle Community College*, Tallahassee, Florida: ACE, 1966.

[2] Seattle Community College, *A Recommended Plan for Articulating the Instructional Programs in Seattle's Comprehensive Community College*, Seattle, Washington: Seattle Public Schools, February, 1966, p. 6.

The College's Plan for the Articulation of Instruction

The planning group used as its basic philosophical guide a document prepared by the staff of Seattle Community College.[3] This basic guide has served as the overriding philosophical framework for the development of the educational specifications for the South Campus. Working definitions of terms were also borrowed from this compilation of objectives, programs and definitions.

Some Planning Concepts

A number of planning concepts were developed and accepted during the planning process. Some of the more pertinent ones are as follows:

Plan for Change

The methods, hardware and curriculum content in education are continually changing.

Similarly, in the introduction of new programs of education, their development is usually a process of maturation. Of particular concern is the fact that community college education is in an evolving state. No one can really know what the future will be. For planning purposes, however, it is important to begin with the knowledge of what is good practice NOW and make the best guess as to the probable direction education will take in the FUTURE. Someone has said, "Coming events cast their shadows before them." Therefore, it is pertinent that the "shadows of the future" in education be identified in order to avoid as many mistakes as possible. It is a mistake to plan entirely for the "now". It is perhaps an even greater risk to plan only for the "future" for it is always evolving. The only certainty that we can depend upon is that education will change. Architectural solutions to this evolutionary process are neither simple nor easy. The concepts of so-called "flexibility", adaptability, malleable space, instant space, and "no-posts" are hardly adequate. Each and every space created by the architect must be understood in terms of its use "now" and its evolving nature for "future" use.

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[3] Seattle Community College, Loc.cit., pp. 1-26.

The community college plant must be planned for change. Some planners advocate "flexibility". It should be sufficient to say that because education changes, the buildings that are constructed for education should contain every conceivable scheme to permit change, adaptation, expansion and the utilization of methods and media unknown to planners today. Each space must be analyzed in terms of its function "now" and its evolving "tomorrow" so that the physical limits of change are made possible by the architecture.

We cannot rely on "flexibility" or the "no-posts" philosophy. While these concepts perhaps will not hinder change, can they be credited with encouraging change in the proper direction?

Multiple Use of Space

Economical planning would suggest that maximum use of space should be possible. In many instances this can be accomplished by planning the same facility to be used by more than one function. Efficient multiple use, however, will depend upon two critical factors; the design of the facility and a location convenient to using functions. Multiple use should never be forced at the sacrifice of the educational program. Consequently, one must weigh the compatibility of the using functions and the extent to which compromises in space design will impair the educational program. Generally speaking, spaces for interchangeable or multiple use should be uncommitted in terms of the design for a special purpose.

Plan for the Day Program of the College

The College program of education and services anticipates year-round and round-the-clock attendance by students. However, no attempt has been made to meet the specific needs of night attending students. Some modifications to space for daytime programs have been provided for occupational extension and apprentice related programs. The major consideration in the planning process has been to provide for the anticipated needs of the daytime enrollment.

It is important, however, that the architecture of the College recognize that there is need for the creation of both a daytime and nighttime environment. A park-like setting for the campus seems to be indicated because of the natural environment of the site.

The nighttime "image" of the campus, perhaps, should be a world unto itself created to cause students to be ever mindful of man and his role in the fulfillment of the "American Dream", and at the same time made awesomely aware that this is his destiny.

Integration of Educational Functions

The planning has been guided by a commitment on the part of the planners to fuse the diverse elements of its educational program into one meaningful set of educational experiences, and thereby truly implement the concept of a comprehensive community college. Our society is characterized by diversity rather than conformity, yet there are unifying elements in our society which give it purposefulness and unity. Similarly, Seattle Community College seeks a unifying element in its architecture that gives common purpose and unity to its educational program. Facilities alone cannot accomplish this goal; however, it can provide the matrix of physical conditions to facilitate the achievement of this purpose by the grouping, location and the design of facilities, and the image it projects to the student.

Procedure Used

The educational specifications were prepared as follows:

1. Groups of educational functions and services were identified as components of the total College program and committees of staff and faculty were organized around this structure.
2. Consultants were assigned to each committee. The consultant assumed the leadership role of the committee, leading discussions and giving directions to the committee process. A set of guidelines on the number and types of rooms and an estimated amount of space was given to each committee as a basis for their discussions.
3. Each committee met at least three and some met more times to discuss philosophy, objectives, teaching and learning activities, and course and course content as a basis for the development of facility needs.
4. The consultant summarized the committee's discussions and prepared the final educational specifications.

5. A steering committee called the "General Planning Concepts Committee" made general policy decisions and reviewed all final statements of educational specifications for each committee.

Planning Focus--The Student

The facilities planning for Seattle Community College should reflect the vigor, the vitality, and the dynamics of a growing institution. Although the College serves a variety of educational goals and needs, the architecture of the College plant should serve as a vital force to give unity to the diversity that its educational program represents. Fortunately, there are no traditions to handicap the planning.

A continuous search has been made for the "big idea" in every function that could give vitality to the planning of the College. From the beginning, the focus of the planning has been the student. The search has been continuous to find answers to the all important question, "How can the physical plant truly reflect the dignity and excellence of the role of each individual regardless of the curriculum he follows?" To fail to recognize the overriding importance of every human personality and to fail to reflect the development of this personality as a value in itself would be a gross planning failure. Therefore, it is of immeasurable importance that the architecture for Seattle Community College reflect the dignity of the individual, that it highlight his heritage, and that his future be a focal point in the search for a better life through education.

The Community College, then, should provide the climate in which each student attending is stimulated to grow to his fullest as an individual--intellectually, vocationally, physically, socially, culturally and spiritually. The College environment should stimulate interest in our cultural heritage, encourage an understanding of other nations and their cultures, and assist students in becoming more effective citizens, neighbors and members of a family.

An atmosphere must be provided which will stimulate an excitement on the part of the student that will cause him to be increasingly more curious about "himself", about "his heritage", and about "his future"; an environment that will cause him to discover increasingly more about "himself", "his heritage", and about "his future", and a matrix of conditions that will cause him to be increasingly more concerned about the development of "himself" physically, socially, morally, spiritually and economically. The goal is a better life for "himself" and an ability to contribute more fully to the development of the society in which he and his fellow men live.

To accomplish this goal the campus planning must depart from contemporary practices by fusing the "liberal arts" and "the trades" into a unified concept of physical form. It is no longer sufficient that one should tolerate the "liberal arts" on the one hand, or "occupational education" on the other; thereby, relegating the facilities for occupational education to the "lower campus". Both must be accepted as essential interlocking dimensions of our present day culture. The achievement of this goal in planning should enable the student, through continuous interactive experience with his contemporaries, and with his day-to-day formal and informal educational experiences, to discover for "himself" a more meaningful life, a better understanding of "his heritage", and greater aspirations for the "future" of "himself and his "fellow man".

Implementation

The product of this effort is but another milestone in the evolving process of implementing the educational plan for Seattle Community College. This document becomes the means whereby the educational program of the College is translated into a facility to house its activities. The edspecs are not intended to restrict the architect in his creation of the physical form of the College, but should provide him the basis for creating not only the physical image but a functional tool of education. The lack of tradition in community college planning leaves the architect free to exercise his imagination and to create new designs and concepts unique to the community college.

The space estimates included herein are intended as guidelines to the architect. Furthermore, the edspecs generally represent a stage in the process of maturing a concept about curriculum, curriculum change, and space requirements. This is to point out that in this evolutionary process, hopefully, maturation will continue and new and better solutions will result from this experience.

CHAPTER II

SITE PLANNING AND DEVELOPMENT

Purpose

The purpose of campus planning is to project an orderly pattern for the development of the physical facilities of the College. A well-conceived plan will give unity to campus development and provide a logical pattern for the growth and expansion of the College without impairing the educational programs of the institution.

The purpose of this section is to provide some guidelines and to suggest some considerations that are primarily educational in character, yet are significant in the planning and development of the proposed campus.

Guidelines for Site Planning and Development

Seattle Community College is a commuter-type institution. This fact suggests certain conditions that will have implications for site planning and development. Students will walk, drive their own cars, or ride public transportation to the campus. Many students will spend all day on campus while many others will attend for just a few hours during some part of the day or evening. Students ranging in age from 16 to 75 will be taking courses ranging in length from a week or two to two full years or longer. A wide range of interests and abilities as well as a variety of long-term educational and occupational objectives will be served by the College. The facilities at this institution will be operated 18 hours per day and, in some instances, 24 hours while serving multiple groups of students.

Planning experience has evolved some general principles which should serve as guidelines in planning for the development of the community college campus and practice has evidenced the need for these. These are as follows:

1. The facilities for administrators, whose primary responsibility is to the public, should be located for easy public access and visual prominence from the public approach to the site.
2. The Instructional Resources Center should occupy a place of prominence in the overall layout of buildings and should be conveniently accessible from primary pedestrian arteries.
3. Buildings serving community functions should have easy public access from adequate parking areas.
4. The College Community Center should be located for easy student access, and service should be provided by reasonably short and direct vehicular service drives.
5. The location of noisy and quiet functions on campus should avoid the unnecessary interference of a noisy activity with a more quiet one.
6. Buildings requiring vehicular service should be arranged for convenient access and made accessible from drives and parking areas.
7. Playing fields, outdoor athletic areas, and swimming pools should be conveniently close to indoor physical education facilities and have direct access to shower and locker areas.
8. Buildings housing mechanical facilities for heating and other utilities should be located so as to provide for the economical distribution of the heating medium through utility lines to the buildings it serves. Adequate provision should be made for vehicular service to the mechanical building.
9. Utility lines should be placed underground and planned for easy expansion to handle future development requirements.
10. Vehicular traffic should be confined to the periphery of the site leaving the interior of the campus to be planned exclusively for pedestrian use.
11. Vehicular traffic should be planned so as not to interfere with instructional activities and should be located so as to avoid unsafe crossings with pedestrian traffic.
12. Probable future enrollment and curriculum expansion should be provided for by the preparation of an open-ended development plan and the designation of uncommitted space on the site.
13. Probable concentrations of pedestrian traffic should be identified and traffic flow patterns developed to permit easy movement about the campus via wide pedestrian walks.
14. Extensive night use of facilities requires that well-lighted pedestrian walks and parking areas be provided.

The Community College campus must be planned first and foremost with a deep concern for its occupants, the students. The students attitudes, feelings and moods, appreciation for the institution, and morale can all be influenced by the impact that the facilities make on them.

Outline of Facility Needs

Table 2.1 includes a summary of facilities requirements for the South Campus. Appendix C contains a detailed breakdown of the space from each chapter. The outline in Table 2.1 consists of the space needs for the various functions, services and instructional fields to be provided by the College.

Factors Affecting Facility Relationships

In the day-to-day operation of the College, there are some considerations in the physical location of the College activities and functions that can enhance the effectiveness of instruction and promote the efficiency of administering the total College program. Some general guidelines are as follows:

1. Noisy functions, the noise from which cannot be suppressed by control techniques, should be located away from relatively quieter areas.
2. Facilities for activities or functions which require common administrative coordination should be grouped together.
3. Facilities for functions requiring service access from a service drive should be located on or near the periphery of the site.
4. Facilities for functions servicing the public should have direct access from approach drives and parking areas.
5. Facilities for functions with a high demand rate for parking, day and evening, should be located near or adjacent to parking facilities.
6. Facilities for functions with a high usage rate by students, e.g., the College Community Center and the Instructional Resources Center, should be located on or very near the main pedestrian traffic arterial on the campus.
7. In the grouping of functions into common building units, their compatibility with regard to noise level, generation of odors, need for outside vehicular service, multiple use of common spaces, should be a major consideration.

8. Areas of "high visibility" should be located on the main pedestrian traffic arteries of the campus.

9. Functions which are expected to expand should be located so as to make needed expansion possible.

10. All facilities should be integrated into a plan that represents a concept of total unity. No one phase of the College program should be identified with any particular sector of the campus.

11. Space organization and arrangement should facilitate close student-professor relationships while providing a friendly informal atmosphere.

Table 2.1: Estimates of Space Requirements for the South Campus of Seattle Community College

Functions and Services	Net Space
Administrative Facilities	8,475
Faculty Offices and Related Facilities	33,860
Facilities for Student Personnel Services	7,060
College Community Center	35,190
Instructional Resources Center	36,105
General Classrooms (including allied supporting classrooms)	28,090
Facilities for Adult General Education	5,880
Physical Education Facilities	40,922
Teaching and Fine Arts Auditorium	13,180
Music Facilities	7,820
Speech and Drama Facilities	10,750
Art Facilities	5,870
Engineering Technologies	20,880
Science Facilities	33,350
Business and Commerce Facilities	18,820
Facilities for Personal Services and Related Occupations	4,470
Facilities for Automotive, Mechanical and Related Occupations	19,300
Facilities for Aeronautical Occupations	22,200
Facilities for Food Services and Related Occupations	9,700

Table 2.1 (Continued)

Functions and Services	Net Space
Facilities for Metal Fabrication, Machines, and Related Occupations	23,850
Apprentice-Related Classrooms	2,400
Facilities for Campus Operations	21,400
TOTAL NET SPACE	409,572
GROSS SPACE (1.54 x Net)	630,741[a]

[a] This figure represents the sum of 65 percent net space in the total plant and 35 percent allowed for walls, corridors, pipe chaises, stairwells, lobbies and entranceways, and partially enclosed covered exterior areas.

More specific criteria regarding the location of specific facilities are discussed in the chapters dealing with specific services and instructional functions. These are not repeated here.

Diagram of Facility Relationships

The diagram shown in Figure 2.1 is a schematic configuration which is intended to express in a general way the desired facility relationships of the various functions and services of the South Campus of Seattle Community College. The components of the schematic diagram do not represent buildings; they do represent major functions.

The purpose of the diagram is to show the desired general relative placement rather than actual locations of the various facilities.

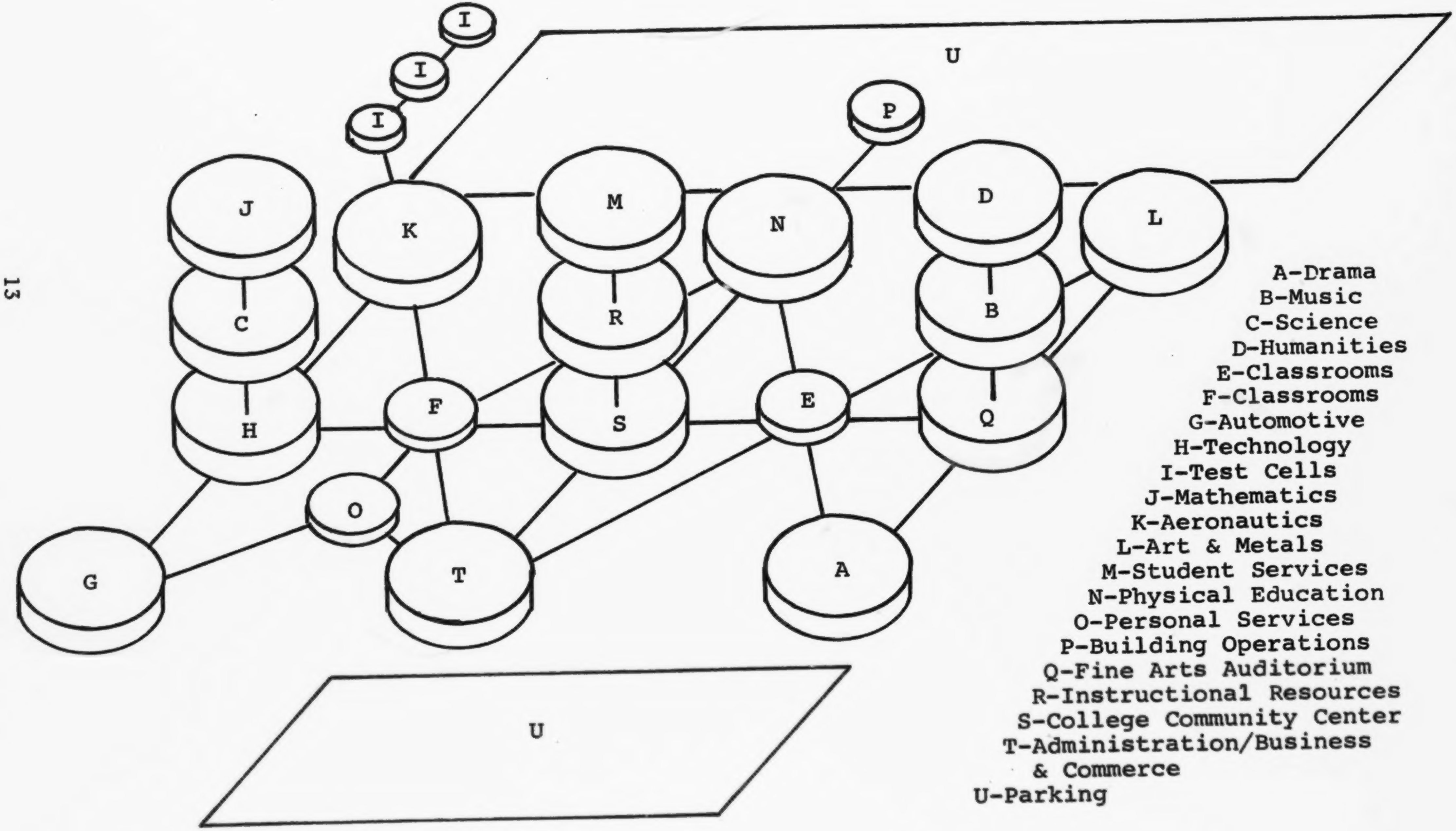
Major Planning Problems

A number of major problems relate to planning the site. The site being restricted in size and rather long and narrow in shape contributes to, rather than reduces, the planning problem.

Approach and Access to the Site

Students will come to the site from three directions. Students from the north will reach the site via Spokane Street and Delridge Way. Those from the south will reach the site via Highland Park

Figure 2.1: General Relationships of Major Educational and Service Functions - South Campus, Seattle Community College



Way, Holden Street, and 16th Avenue Southwest. Students from the east will use either the north or south access route. Those from the west will use local streets to 16th Avenue.

The data on population distribution suggests that approximately 40 percent would come from the south and east, 16 to 20 percent from the west, and the remainder from the north.

Public Transportation

At the present time, public transportation to the area in West Seattle in which the site is located is limited. However, it is conceivable that student demand could cause an improvement in the service to this area. No estimates are available on the number of students who might ride public transportation. Factors such as bus schedule, frequency of runs, and convenience of transportation to the residence of the student will influence the number of riders. It is the considered judgment of the planners that only minimum use will be made of public transportation facilities.

Utilities

These services are available in the area and no major problems are anticipated in obtaining these services. Perhaps the cost of extending these services will be the major consideration.

Physical Education Spaces

The edspecs suggest that approximately 15 acres of land are needed for the physical education program. This includes land area for a broad program which will eventually develop.

Parking

The Community College serves a commuting population. Students will have to drive, walk or use public transporation to reach the College campus. Present trends in auto ownership by college-age students indicate that a large percentage of the student population will drive to school and require parking accommodations to meet this need. Many colleges are planning a parking space for each full-time equivalent day student. Others are providing spaces at a rate of approximately 60-75 percent of the number of full-time equivalent day students.

This problem has been discussed at length and its various aspects analyzed. There seems to be general concensus that parking accommodations should be provided at no cost to the student, otherwise, at as little cost as possible.

Adequate and convenient parking accommodations for the students at the South Campus of Seattle Community College would require between 3,750 and 5,000 parking spaces. Acreage requirements would be 25 and 33.3 acres for 3,750 and 5,000 cars respectively. The South Campus has a total acreage of approximately 65 acres. With 33 acres of parking and 15 acres devoted to physical education space, only 17 acres would remain for buildings, service drives, and open areas. It would appear that some sort of compromise plan is necessary to solve the parking problem.

Several alternatives appear to be possible:

1. Alternative A:
    - a. Provide parking spaces for 1,500 cars.
    - b. Seek the cooperation of the Seattle Transit System to schedule buses to the campus at frequent intervals and at convenient times for student use.
    - c. Work with students to encourage the use of car pools and joint use of rides to the campus.
    - d. Seek Legislative authority to permit the College to sell revenue-producing bonds to build parking garages for the additional spaces needed--the cost to be amortized by the rental of parking spaces to students.
2. Alternative B:
    - a. Provide parking spaces for 2,000 cars.
    - b. Purchase low-cost land at a distance from the campus and develop for parking. Seek assistance from the Seattle Transit System to provide shuttle bus service to the campus. The College might consider providing such a service itself, if the City would not.
3. Alternative C:
    - a. Provide parking spaces for 2,000 cars.
    - b. Lease land to a private concern who would build, rent and operate a parking garage for students and faculty use.
4. Alternative D:
    - a. Provide parking spaces for 3,000 cars.

b. Seek the cooperation of the Seattle Transit System to schedule buses to the campus at frequent intervals and at convenient times for student users.

c. Organize a car pool system and issue parking permits to groups of students who register for a car pool. Car pools may be voluntary or assigned by the administration.

The consultants recommend Alternative D as the choice of the alternatives.

Site size requirements for Alternative D are as follows:

1.	To park 3,000 cars	20.00 acres
2.	Physical education space	15.00 acres
3.	Building space (two-story building)	7.25 acres
4.	Open space service drives, courts, walks, and landscaped areas	22.75 acres
	TOTAL ACREAGE	65.00 acres

CHAPTER III

FACILITIES FOR ADMINISTRATION AND FACULTY

Administration

Philosophy and Objectives

The fundamental purpose of community college administration is to facilitate teaching on the part of the faculty and learning on the part of the students. The activities, actions and decisions of the campus administrative officers, the deans, directors, Admissions Officer, Registrar, Business Officer, chairmen of departments, and the like, all are directed to the above purpose.

The administrator's relationships with the general public, the board, other administrative officers, the faculty, students, the staff, the budget, curriculum, and other related and necessary relationships, all point to the purpose as stated above.

It is essential, therefore, that the allocation and arrangement of space for administrators, secretaries and other staff members be such as to enable the administrative personnel to perform their functions and tasks with the greatest of ease as they deal with people, problems and tasks at hand. Communications should be little problem through good telephone service, secretarial and other necessary media.

Personnel, Their Functions and Facility Needs

College Vice-President

The Vice-President of the South Campus is the chief officer on the campus and is directly responsible to the President of Seattle Community College. This President has offices off the campus. All personnel on the campus, directly or indirectly, are responsible to the on-campus Vice-President. The Vice-President will deal with parents, directors, other campus administrative officers, faculty members, and students on the campus.

Frequent conferences with all of these groups will be routine. He must be able, by bulletins, memoranda, letters and telephone to readily communicate with all groups and individuals. He will have the same relationships with the central off-campus administrative officers such as the President, Business Officer, and the like.

Vice President's Office

The Vice President's office should have a space of 400 square feet (net). There should be a large double pedestal desk with an "extend-a-top" and also a matching credenza, a suitable office chair, four side chairs all upholstered, two matching smoking stands, and a coat and hat rack. There should also be a matching filing cabinet. There should be a television, telephone and electrical outlets. The office should be paneled.

There should be a matching conference table with three suitable ash trays and ten upholstered chairs. This conference table will be used for small meetings called by the Vice President.

There should be a restroom connected with the Vice President's office and also, if possible, connected with the Conference Room.

A paneled Conference Room should be connected with the Vice President's office with a diamond-shaped conference table and twenty upholstered chairs. There also should be a kitchenette (coffee bar) in the Conference Room adjacent to the wall next to the office. This room should also open into the hallway for outside access. This Conference Room will be used by the Vice President for meetings with the directors and other administrative officers including, at times, the division heads. Certain citizens' committees of the College may meet in this room as well as committees of the faculty and students as scheduled by appropriate staff members.

The secretary's office should have a connecting door to the Vice President's office and one to the hallway. A double pedestal secretary's desk and chair and four side chairs should be in the office. A storage cabinet (built-in) approximately 2 feet by 10 feet or 2 feet by 12 feet with doors and adjustable shelves should be provided. Filing cabinets will also be required. A telephone outlet should be connected with the Vice President's office.

All of these rooms and all other offices for administrative personnel should be carpeted. Some kind of picture molding should be at the top of the walls.

Staff Lounge with Coffee Bar and Workroom

This Lounge is for the staff members, secretaries and clerks, etc., in the administrative offices. Comfortable and appropriate lounge chairs and coffee tables, pictures, mirrors, smoking receptacles, and lamps should be furnished. There should also be a coffee bar (kitchenette) similar to that in the Vice-President's Conference Room.

Possibly adjacent to (but not necessarily) should be a staff workroom for use by the administrative offices. It, of course, should be readily accessible to the administrative personnel. On one of the long walls should be a counter-height cabinet with a formica top. This cabinet should have adjustable shelving for storage of supplies for duplication, etc. There should be worktables, chairs and duplicating equipment along with other equipment such as a collator, staplers, spiral binders, and paper cutter. There should be a sink with hot and cold water. There should be 6 feet of tack board and 6 feet of chalk board on the walls.

Other Administrative Offices

All of the administrative spaces below should be arranged so as to permit adaptable space changes to meet future needs for expanding or dividing these existing spaces. All of these offices are to be accessible to the students who attend in the evening.

Dean, College Parallel Program

Dean's Office

This office should be furnished with a double pedestal desk, office chair, three side chairs, two smoking stands, book case (6 feet by 8 feet) with adjustable shelves, filing cabinet, clothes rack, and telephone.

Secretary's Office

Double pedestal secretary's desk and chair, three side chairs, storage cabinet (approximately 2 feet by 12 feet) with doors, adjustable shelving for supplies and possibly college catalogs, a filing cabinet, a telephone connecting with the Dean's office, and doors connecting to the hall and the Dean's office.

The other deans' offices and assistant administrators' offices including the Dean, Occupational Education; Dean, Adult General Education; Assistant Administrator's Office; Dean, Student Services and his Assistant's Office; Coordinator of the School in the Evening and his Assistant; are as detailed above.

Public Information Office

This Officer will produce public information bulletins and other such materials for the College.

His office and his secretary's office will be as previously detailed. Connected with these offices will be a production workroom with storage for materials and supplies. Also, a worktable and necessary equipment.

Secretarial Pool for Administrative Officers

There will be space in the secretarial pool for possibly three secretaries with appropriate secretarial desks and chairs and one side chair for each desk. A small service table 27 inches by 6 feet should be included. There should be 6 feet of tack board in the room. This room should be wired for central dictating facilities from each administrator's office. Through these secretaries and the central dictating equipment, the administrators can do routine dictating and instructions and thus relieve certain of the executive or administrative secretaries for such executive secretarial work.

Assistant Director of Business Services

The office of the Assistant Director of Business Services and the secretary's office should be as previously detailed. If possible, the secretary's office should be accessible both to the lobby and to the clerical desk area.

The 700 square feet of lobby space is to include a counter (27 inches wide) across the space with gate entrance at one end of the counter to the space behind the counter. The counter should be about 5 feet from the front wall of the room as student lobby space and have 6 feet of working space behind the counter as inside service area. The counter will have cabinet space underneath for ready supplies. This counter possibly should be enclosed with openings for service.

Adjacent to this service area behind the counter are to be three areas as follows:

There will be an area enclosed by a wainscoting topped by opaque glass, or otherwise, to provide a counting room in which to recieve all cash receipts such as tuition and fees; and daily receipts, such as the bookstore, cafeteria and vending machines. This room should have a double pedestal desk, office chair, and a side chair. There also should be a 6 foot table and chair and a coin-counting machine. Accessible to this room should be a fireproof safe.

The accounting room (also enclosed) should have the equipment necessary for machine bookkeeping, desks, tables and chairs, and filing cabinets.

The clerical staff desk (open) area is for three or four workers, part of whose duty is to wait on the counter trade. This area should have secretarial desks and chairs. Possibly four side chairs should be provided.

The storage space of 48 square feet should be located in the clerical staff service area for office supplies.

A vault of 100 square feet should be located so as to be accessible to all of the areas in the business services space.

The receiving room should be connected by a door to the secretary's office. This receiving room is for the purpose of receiving and storing certain supplies which will come to the Business Office rather than to the Services Building.

Data Processing Room

This room is to have appropriate electrical outlets for the data processing machines. There are to be worktables and chairs, cabinets for data processing cards, tapes, etc., and telephone.

This room should be near the Registrar's space and business offices.

Telephone Service Room with Operator

After conferences with the telephone company as to the type of telephone service which is to be used, the space for housing the needed equipment will be better determined. It is believed that not more than 300 square feet will be needed.

Connected to this space should be an area of approximately 150 square feet for the operator and/or information booth, or office. This person (or persons) acting as an information office will answer all kinds of telephone calls regarding the College as well as answer questions and give directions to visitors and others who may come into the administrative complex.

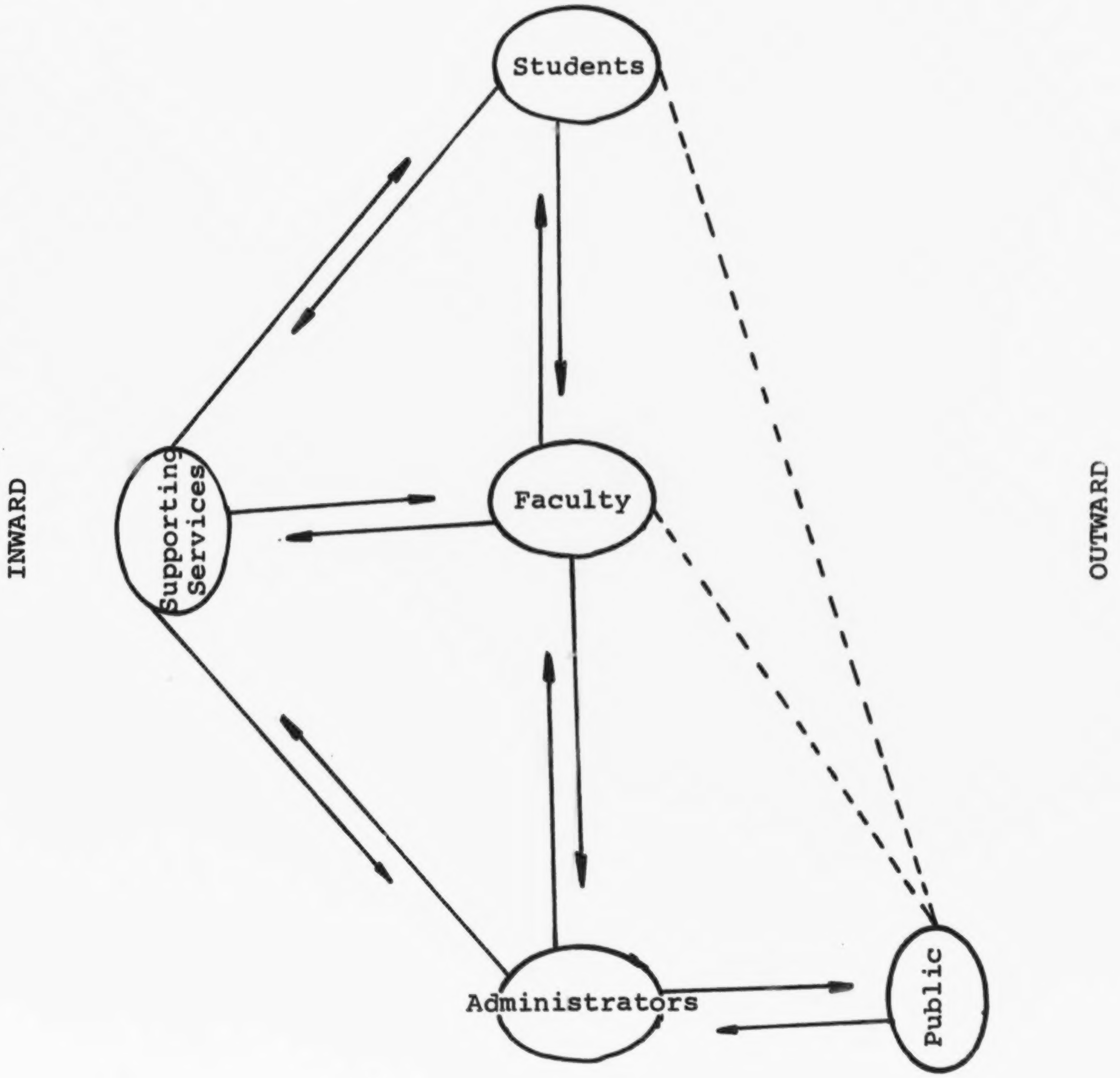
Functional Relationships of Space Components

Figure 3.1 includes a graphical representation of the functional relationships which are desirable in order to provide effective leadership to the College staff and faculty and to enhance communication between faculty and staff, administrators, students, and the general public. The graphical representation divides the functions of administrators, faculty and staff as to whether or not their responsibility is primarily the public (the outward look) or primarily to faculty or students (the inward look).

The following criteria are suggested:

1. These administrators whose functions relate primarily to the public should be housed for easy access to one another and to the principal public approach to the campus.
2. Those administrators whose functions relate primarily to students should be housed for easy access to student activities and instructional areas.
3. Those administrators whose primary functions relate to faculty should be housed for ease of communication and personal contact avoiding, of course, identifying with a particular division or department.
4. All faculty and administrators whose principal assignments involve the use of specialized space should be located in close proximity to it.
5. Recreational and social areas provided for faculty and administrators should be planned and located for interdisciplinary contact and informal communication.

Figure 3.1: Functional Relationships of Administrative and Related Functions



6. Faculty members and appropriate instructional administrators should be housed so as to enhance personal contact, communication and self identification within their administrative unit.

The following lists the administrative personnel and staff according to whether their prime responsibility is to the public or to the faculty and students.

Outward Look (Prime Responsibility)

Relates to the Public

1. Campus Head
2. Public Relations Director
3. Admissions Officer
4. Business Manager (Bursar)
5. Community Services Director
6. Faculty Recruitment Officer

Inward Look (Prime Responsibility)

Relates to Students

1. Instructors--Advisors
2. Counselors
3. Instructional Resources Center Personnel
4. Bookstore and Student Center Personnel
5. Student Personnel Dean
6. Student Personnel Administrators
7. Student Activities Personnel
8. Registrar
9. Financial Aids and Placement

Relates to Faculty

1. Deans
2. Division Chairmen
3. Department Heads
4. Coordinators
5. Other Faculty

Table 3.1 lists the approximate space requirements for the administrative offices for the South Campus.

Table 3.1: Approximate Space Requirements for the Administrative Offices for the South Campus of Seattle Community College

Allocation of Space	Net Square Feet	Gross Square Feet
Administration		
Campus Vice-President		
Office	400	
Rest Room	24	
Secretary and Reception	150	
Storage	27	
Conference Room 20	400	
Coffee Bar	24	
Sub-Total	1,025	
Staff Lounge with Coffee Bar	524	
Staff Workroom	240	
Sub-Total	764	
Dean, College Parallel Program		
Office	225	
Secretary's Office	150	
Storage	25	
Sub-Total	400	
Assistant Administrative Office	120	
Secretary's Office	120	
Storage	25	
Sub-Total	265	
Dean, Occupational Program		
Office	225	
Secretary's Office	150	
Storage	25	
Sub-Total	400	
Assistant Administrative Office	120	
Secretary's Office	120	
Storage	25	
Sub-Total	265	
Dean, Adult General Education		
Office	225	
Secretary's Office	150	
Storage	25	
Sub-Total	400	

Table 3.1 (Continued)

Allocation of Space	Net Square Feet		Gross Square Feet
Assistant Administrative Office	120		
Secretary's Office	120		
Storage	25		
Sub-Total		265	
Dean, Student Services			
Office	225		
Secretary's Office	150		
Storage	25		
Sub-Total		400	
Assistant Administrative Office	120		
Secretary's Office	120		
Storage	25		
Sub-Total		265	
Coordinator of School in the Evening			
Office	150		
Secretary's Office	150		
Storage	25		
Sub-Total		325	
Assistant Administrative Office	120		
Secretary's Office	120		
Storage	25		
Sub-Total		265	
Public Information Office	120		
Secretary's Office	120		
Workroom	120		
Storage	40		
Sub-Total		400	
Secretarial Pool for Administrative Offices		250	
Assistant Director of Business Services			
Business Office	150		
Secretary's Office	150		
Lobby-Counter & Staff Space:			
Outer Lobby	100		
Counter	50		
Inside Service Area	120		

Table 3.1 (Continued)

Allocation of Space	Net Square Feet		Gross Square Feet
Counting Room	96		
Accounting Room	120		
Clerical Desk Area	214		
Storage	36		
Vault	100		
Receiving Room	450		
Sub-Total		1,586	
Data Processing Room		750	
Telephone Service Room	300		
with Operator	150		
Sub-Total		450	
GRAND TOTAL		8,475	13,040

Faculty Offices

Facilities for Faculty

Each faculty office of the regular faculty, exclusive of heads of departments, or equivalent, is to have space of between 80 and 90 square feet (net). The principle is that each faculty member should have a private office. It has been found that when a faculty member has his own office equipped with a double pedestal desk, office chair, two side chairs, clothes rack, and filing cabinet, he can work much more efficiently, counsel students much more advantageously, and thus the College gets more out of the faculty member than if he is in an office with one or more persons. It does not cost much more to provide an office for each person than it does to provide one office for two or more people. Each office should also be equipped with a telephone and an electrical outlet.

There should be office space for a secretarial pool according to the size of the department or the number of faculty members, possibly a pool for each 10 to 12 faculty members--approximately 60 square feet per secretary.

This space should be equipped with secretarys' desks and chairs and a work table, filing cabinets, and telephone and electrical outlets.

The chairmen or heads of departments, or their equivalents, should have offices of 120 square feet. Each office is to be equipped as detailed above for the regular faculty offices.

It is suggested that all offices be carpeted.

Part-Time Faculty

It is estimated that there will be 250 evening faculty members on a part-time basis in the academic field and 100 evening faculty members in the occupational field. The expense would be very large to provide 80 square feet of individual office floor space for each of these evening faculty members who may teach in the academic field a total of three hours a week, either one and one-half (1½) hours twice a week, or three (3) hours once a week. To provide full office space of 80 square feet each for the 100 evening faculty in the occupational fields on the above basis also would be very expensive.

These evening (part-time) faculty members, however, have the responsibility for counseling their students, have need for space for pre-class preparation of lectures, keeping of records, and the like. The best solution to this space problem seems to be that of providing 40 square feet of space for a 4 feet by 5 feet alcove or study carrel with overhead book shelf and a chair for those who will use such space. One such space with appropriate lighting would serve two academic and occupational evening faculty members because one of the two would teach on Monday and Wednesday evenings and the second one would teach Tuesday and Thursday evenings. In order to provide space for the keeping of the professional books, records, etc., there should be individual lockers built into the same room with the carrels of some 4.5 square feet (1½ feet by 3 feet). In this way each evening faculty member will have a separate locked space for his materials to be taken out the evening he is on duty.

Faculty Lounge and Workroom

There is need for several faculty lounges and workrooms. It is suggested that one such lounge and workroom be provided at the rate of approximately one for 50 day faculty members. On this basis there would be three (3) such lounges and workrooms for the academic area and two (2) for the occupational area.

Each lounge should be carpeted, have appropriate lounge chairs, coffee tables, lamps, etc. The workrooms might be separate from the lounges but should be available for faculty and secretaries for the preparation of instructional materials. The rooms will be equipped similar to the staff workroom in the administrative complex.

The Advisory Committee for Faculty Offices were of the opinion that only about 72 of the academic and 48 of the occupational evening faculty members would use such office facilities. On the basis that only half of each group of faculty members would be present on any one evening, then only 36 faculty spaces would be needed for the academic and 24 for the occupational evening faculty members.

Since there are to be three faculty lounges for the academic area and two for the occupational, it is suggested that each of the three recommended office spaces of 1,080 square feet be located adjacent to each of the five faculty lounges with a connecting door. In each of these large office areas there will be 12 faculty spaces of 4 feet by 5 feet alcove desk space and 24 individual lockers of 1½ feet by 3 feet. A telephone should be in each of these five group office spaces. These group offices should be carpeted.

Adult General Education

These faculty offices will be furnished as previously detailed for offices, except that the 160 square foot secretary's office will provide two secretary's desks--one secretary for each ten faculty members.

It is suggested that all offices have a picture-hanging molding around the walls for pictures, plaques, etc. Possibly all or most of the offices, such as for science, mathematics, and the like should have 4 feet to 6 feet of chalk board located on one wall of the office.

Functional Relationships of Faculty Offices

No attempt has been made to develop a chart of functional relationships for faculty facilities. Generally speaking, faculty offices are best located near the facilities that instructors will use for instruction purposes. For example, the science teachers usually prefer to be housed in close proximity to the area where science labs and preparation rooms are, since their instructional aids and teaching materials are located there also. Similarly, teachers of music, art and occupational education express the same desire and need.

It is suggested that faculty offices be distributed throughout the campus and located for the convenient access by teachers to instruction areas. Faculty offices should be grouped by department and by division, where practical. Grouping offices of departments and divisions makes more efficient use of space for waiting, storage and workrooms, and enhances the accessibility of secretarial services, generally.

Table 3.2: Approximate Space Requirements for the Faculty Offices for the South Campus of Seattle Community College

Subject Area		Net Square Feet		
College Parallel				
Fine Arts				
Chairman Office		120		
Secretary Office		120	240	
Art				
6 Faculty Offices	@	80	480	
Music				
7 Faculty Offices	@	80	560	
Speech and Drama				
2 Faculty Offices	@	80	160	
16 Sub-Total				1,440
English-Journalism				
Chairman Office		120		
Secretary Office		120	240	
24 English Faculty Offices	@	80	1,920	
1 Journalism			80	
26 Sub-Total				2,240
Foreign Languages				
Chairman Office		120		
Secretary Office		120		

Table 3.2 (Continued)

Subject Area		Net Square Feet		
			240	
8 Faculty Offices	@	80	640	
9 Sub-Total				880
Mathematics-Physics				
Chairman Office		120		
Secretary Office		120		
			240	
20 Faculty Offices	@	80	1,600	
21 Sub-Total				1,840
Life Sciences				
Chairman Office		120		
Secretary Office		120		
			240	
10 Biology Faculty Offices	@	80	800	
8 Chemistry Faculty Offices	@	80	640	
19 Sub-Total				1,680
Social Sciences				
Chairman Office		120		
Secretary Office		120		
			240	
37 Faculty Offices	@	80	2,960	
38 Sub-Total				3,200
Business Administration				
Chairman Office		120		
Secretary Office		120		
			240	
8 Faculty Offices	@	80	640	
9 Sub-Total				880
Physical Education				
Chairman Office		120		
Secretary Office		120		
			240	
11 Faculty Offices	@	80	880	

Table 3.2 (Continued)

Subject Area	Net Square Feet				
12 Sub-Total				1,120	
150 Sub-Total (Academic)					13,280
4 Part-Time Faculty (1 Music, 1 English, 2 Social Science)	@	80			320
13 Secretarial Pool Spaces	@	60			780
TOTAL (Regular Academic)					14,380
3 Faculty Lounges (Academic)	@	500	1,500		
3 Workrooms	@	200	600		
3 Evening Faculty Office Rooms	@	1,080	3,240		
9 Sub-Total				5,340	
TOTAL (All Academic)					19,720
Occupational Education					
Food Service					
1 Assistant Director's Office		150			
Secretary Office		150	300		
1 Chairman Office		120			
Secretary Office		120	240		
Faculty Offices					
2 Baking	@	80	160		
2 Restaurant	@	80	160		
1 Food Service			80		
1 Commercial Food Preparation			80		
7 Sub-Total				1,020	
Business and Commerce					
1 Assistant Director's Office		150			
Secretary Office		150	300		

Table 3.2 (Continued)

Subject Area		Net Square Feet		
Business Management, Accounting and Finance				
1 Chairman Office		120		
Secretary Office		120		
			240	
Offices				
3 Accounting and Finance	@	80	240	
3 Bookkeeping	@	80	240	
2 Data Processing	@	80	160	
9 Sub-Total				1,180
Marketing and Distribution				
1 Chairman Office		120		
Secretary Office		120		
			240	
Offices				
3 Insurance Risk Management	@	80	240	
3 Real Estate	@	80	240	
3 Retail Management	@	80	240	
3 Retail Selling	@	80	240	
1 Part-Time			80	
14 Sub-Total				1,280
Office Occupations and Secretarial Science				
1 Chairman Office		120		
Secretary Office		120		
			240	
Offices				
6 Secretarial Science	@	80	480	
2 Stenography	@	80	160	
1 Typing and General Clerical			80	
1 Office Machine Operations			80	
1 Part-Time			80	
12 Sub-Total				1,120
Home Economics				
1 Chairman Office (Foods)		120		
Secretary Office		120		
			240	
1 Faculty Office (Clothing)			80	
2 Sub-Total				320

Table 3.2 (Continued)

Subject Area		Net Square Feet		
Engineering-Related Occupations				
1 Assistant Director's Office		150		
Secretary Office		150		
				300
Technical Occupations				
1 Chairman Office		120		
Secretary Office		120		
			240	
Offices				
3 Engineering Technology	@	80	240	
6 Mechanical Drafting and Design	@	80	480	
3 Civil Technology	@	80	240	
1 Part-Time			80	
14 Sub-Total				1,280
Aeronautical Occupations				
1 Chairman Office		120		
Secretary Office		120		
			240	
Offices				
4 Power Plant Mechanics	@	80	320	
4 Air Frame Mechanics	@	80	320	
2 Instrument Mechanics	@	80	160	
1 Part-Time			80	
12 Sub-Total				1,120
Metal Fabrication, Machining, and Related Occupations				
1 Chairman Office		120		
Secretary Office		120		
			240	
Offices				
2 Machine Shop	@	80	160	
2 Sheet Metal Working	@	80	160	
4 Welding and Metal Fabrication	@	80	320	
9 Sub-Total				880
Automotive				
1 Chairman Office		120		

Table 3.2 (Continued)

Subject Area		Net Square Feet			
Secretary Office		120			
			240		
Offices					
3 Automotive Technology	@	80	240		
6 Automotive Repair	@	80	480		
1 Automotive Servicing			80		
1 Part-Time			80		
12 Sub-Total				1,120	
TOTAL (Occupational)					9,620
2 Faculty Lounges (Occupational)	@	500	1,000		
2 Workrooms	@	200	400		
2 Evening Faculty Office Spaces	@	1,080	2,160		
6 Sub-Total					3,560
TOTAL (Occupational)					13,180
TOTAL (Academic)					19,720
Adult General Education					
10 Faculty Offices	@	80	800		
Secretarial Office Space for Two			160		
TOTAL (Adult General)					960
GRAND TOTAL FACULTY OFFICES AND ADMINISTRATION					42,335

CHAPTER IV

FACILITIES FOR STUDENT PERSONNEL SERVICES

Philosophy and Objectives

The community college is based on the concept of service to the community and to its youth and adults. The college is dedicated to the purpose of stimulating each student to the greatest possible growth.

The Student Personnel Services Program of the College consists of a series of related functions which support the instructional program; seek out and respond to student needs; and promote the personal, social, intellectual and career development of the individual student. The well-conceived and effectively implemented program of student personnel services will provide for students:

1. Information services.
2. Admissions services.
3. Testing services.
4. Guidance and counseling services.
5. Registration services.
6. Student health services.
7. Leadership for student activities; i.e., self government, etc.
8. Special services such as food, recreation, bookstore, insurance, etc.
9. Placement services, scholarships, and financial aid.

Descriptions of Functions and Services

Information

Students and prospective students require a great variety and amount of information regarding the College, its programs, and services. This information is received by correspondence, by phone, by publications, and on a face-to-face basis. The main student information center would be adjacent to, and a part of, the Admissions Office. Suggestions related to the speedy and economical handling of this service include:

1. Continuous presentation on film clips with dialing arrangement.
2. Phone connections--dial 21 for Data Processing, etc.
3. Bank window type--drive-in, several windows (near parking area).
4. Near student lounge--bank of phones for different purpose (a) general information, (b) appointments, (c) etc.
5. An electronic and projector arrangement in reception room with answers to the 30 to 50 most often asked questions.
6. Bulletin boards and career information stands.

Admissions

The community college has an "open door" policy but must be selective in admissions to programs. The communication of this concept is one of the first responsibilities of "admissions". The Admissions Office is the hub from which many student services emanate.

Admissions is primarily concerned with six processes leading to College entry. These are:

1. Supplying information on entrance requirements and schedules of admissions.
2. Providing application forms.
3. Accumulating credentials, transcripts, personal data, and progress reports on students.
4. Storing and providing accessibility to records about students.
5. Issuing grade reports and transcripts of credits.
6. Admissions counseling.

In planning facilities, attention must be given to the following:

1. Phone answering--three girls now.
2. Counter answering--two girls now.
3. Offices for staff-personnel (include with 10 total).
4. Waiting room size--25 maximum.
5. Security of records--ease of access--fire protection.
6. Close relationship with business office.

7. Plans for putting records into data processing and the storage and retrieval of information.

Testing

Testing in a community college involves many students. Some concept of the dimensions of test programs can be seen from the following list:

1. Testing for admission--most full-time students.
2. Test for registration--students who are marginal or below, for program desired.
3. Test (special) to discover weaknesses for referral to Developmental Program.
4. Test (special) for career potential.
5. Test for part-time students and adults.

Counseling

This is the process by means of which students are assisted in self evaluation and in relating their plans to a realistic appraisal of their situation, their interests, and their capacities. Some counseling is done by a staff especially trained in psychology, in testing, and in test evaluation. Much of the counseling, however, is done by faculty, administrators, coaches and librarians. While it may not be sound policy to *require* all faculty to accept responsibility for counseling, maximum involvement should be sought. Each student should have an advisor. Counseling should not be limited to pre-admission or pre-registration but should relate to continuous appraisal of the student.

Some counseling is achieved in large classes scheduled as "Orientation to College", "How to Study", "How to Take Notes and Write Reports", "You and the Draft", and "Financing Your Education". Some involve referral to developmental programs to remove deficiencies and some are career oriented.

In considering space needs, much of the individual counseling will be done in the faculty offices. Special attention will be needed for space for group counseling and for the administration and central core of trained counselors who have major responsibility in this area.

Registration

This is the process by which the students select and sign up for specific courses at specific times. This process may take on several forms depending upon the extent of pre-registration and the degree of automation. In its simplest form it involves the preparation of forms for student use in registering for classes, students being advised about course needs, and a formal "sign-up" by a student for a particular class or classes, the schedule for which has been predetermined. It further involves the processing of drops and withdrawals and the processing of class changes.

In a college of 5,000 FTE's, perhaps 300 or more people would go into the admissions-registration area each day seeking information, advice, drop and withdrawal forms, registration materials, and information about classes and admission requirements.

Infrequent mass registration would take place perhaps in a large facility such as the gymnasium, the cafeteria, or similar space. Permanent space is not needed for this purpose.

Figure 4.1 is a diagram of the steps a student must follow in the process of entering, registering and attending college.

Health Services

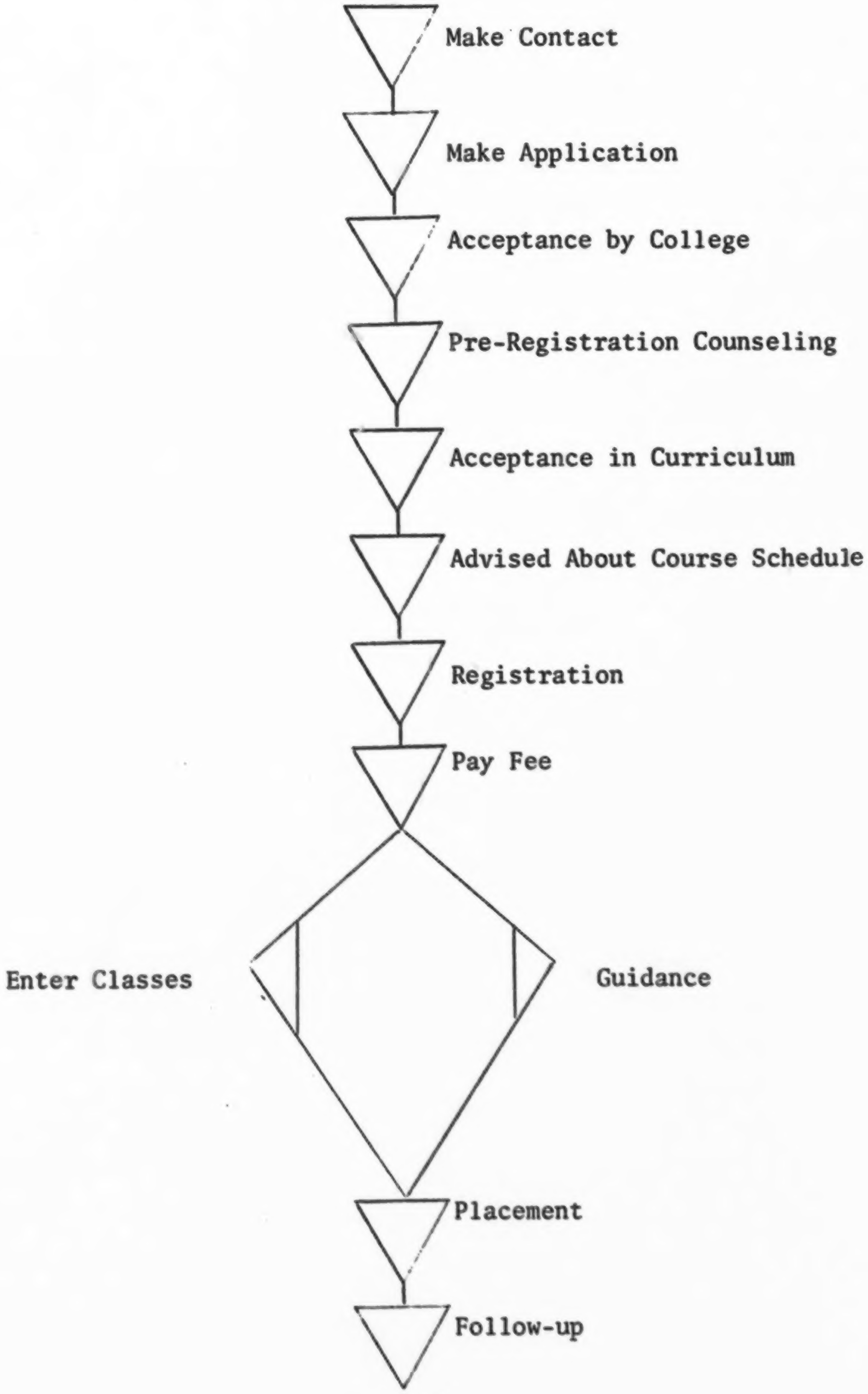
Provisions must be made for injuries, accidents and sudden illnesses of students. Some suggestions made were:

1. Health unit should be adjacent to the counseling area.
2. Health unit should be accessible to campus exits for ambulance.
3. In addition to a trained nurse, the campus policemen, physical education instructors, and shop instructors should hold first-aid certificates.

Personnel to be Housed or Served

All full-time and part-time students will be served in some parts of the facility planned. Approximately 15 counselors are to be housed in the facilities provided--ten in the counseling area and five in decentralized locations adjacent to faculty office areas. Space for secretaries, clerks and typists should be provided for

Figure 4.1: Flow Chart for a Student Entering, Registering and Attending Seattle Community College



the entire Student Personnel Services Program. The total number of secretaries, clerks and typists will approximate 30 people.

Space Components and Facility Considerations

Types of Facilities

The following types of facilities will be required:

1. A reception space for the student counseling area.
2. A student information center in or adjacent to the counseling reception area.
3. Space for the registration and admissions functions.
4. Space for guidance and counseling including testing areas.
5. Health services area.
6. Staff offices.
7. Work and storage areas.
8. Secretarial space.

Individual Space Considerations

Counseling Reception Area and
Information Center (600 square feet)

This area will serve two main functions:

1. A waiting area for students to be interviewed by counselors.
2. A work area for students in making course selections, reading, viewing films or clips, listening to tapes at carrels, and taking individualized tests.

Counter and table space should provide approximately 30 work stations and waiting chairs. Division of spaces should be as follows: six counter spaces, ten waiting seats, six reading areas, and eight writing spaces.

Furniture and equipment should include:

1. A work counter 12 to 15 feet long to handle six students at the counter at a time.
2. Ten upholstered waiting chairs.
3. Six reading carrels and chairs equipped for film clips and audio playback.
4. Two bulletin boards at least 6 feet in length.

5. A carousel-type projector set-up to project answers to the 30 to 50 most asked questions.
6. A reference rack to display guidance materials such as catalogues, brochures, books and magazines.
7. A reception desk and chair should be provided for a receptionist to arrange and announce appointments, answer questions, suggest reading materials, etc.

Additional considerations should include:

1. Space behind the work counter for assistants at peak loads.
2. Storage for testing materials in filing-type cases.
3. Entrances and exits should be separated due to heavy traffic at peak periods.
4. This area will serve as an access area to those persons responsible for guidance and counseling, health services, scholarships, loans and placements.
5. Access to fire-resistant-records storage should be provided.
6. The counseling, reception and information area should be a quiet area and project a welcome to students.
7. The counseling, reception and information area should have access and open onto a larger entry space. Access to it should be convenient to students yet provide a high degree of sound isolation.

Counseling Offices
(15 offices at 100 square feet each)

The functions of these offices will include:

1. Counseling interviews.
2. Small group counseling.
3. Routine office work of the counselor such as reviewing student records, test data, and schedule information stored in the admissions records storage room.

The offices should be approximately 100 square feet in size. The atmosphere created should be one conducive to the above activities. A counselor should not be forced by the design of the space to face a counselee across the desk. An informal, relaxed and intimate space is desirable for the counseling function.

Furniture and equipment should include:

1. A desk and chair with space for counselor and counselee to write.

2. Three upholstered side chairs for counselors.
3. A file cabinet for storage files on an interim basis.
4. A bulletin board outside the door of the counselor's office and on the inside (4 feet in length).
5. A telephone.
6. A bookcase for reference materials and books.

Other considerations should include:

1. Some means to indicate the counselor and counselee's presence in the office to avoid interruptions.
2. Connections for closed circuit TV to permit the ultimate receiving of data about a student from the Admissions Office by electronic data transmission through TV.
3. A means of exit for the counselors without going through the reception area.

Testing/Conference Rooms
(600 square feet)

Two of these rooms, with a capacity for 15 students each, should be provided. Each space should contain approximately 300 square feet. The purpose of these rooms is to:

1. Provide space where individuals can work without distraction in small groups.
2. Provide a space for small group testing and small group counseling.

The receptionist in the reception and information area should provide supervision of this area. One of these rooms should open from one of the counseling offices. Visual surveillance should be possible from the reception area.

Furniture and equipment in these rooms should include 4 four-place tables with appropriate chairs, 8 lineal feet of chalk board, lockable cupboard storage, and open shelves for materials storage. Good lighting is essential for quick and easy seeing without glare from any source.

Health Services Area
(800 square feet)

This facility would provide health services to students including screening, examination, counseling, first-aid and those services supplemental to the health education program of the College. This facility should be planned so that the receptionist of the counseling reception area could serve as the receptionist to the health services area. Accessibility to the entrance of the facility and a parking area are desirable.

The various functional areas needed and their descriptions are as follows:

1. A small reception and display area with a small desk and chair for a nurse, four upholstered waiting chairs, and five filing cabinets.
2. A small office for head nurse or itinerant physician with desk, chair and side chair.
3. An examination area with dressing facilities--mirror, sink, dressing locker, weighing scale, testing instruments, and cabinet for medical supplies; also a first-aid cabinet.
4. Separate rest areas for men and women--six women and four men.
5. Toilet facilities for each sex.

Scholarships, Loans and Placement Office (120 square feet)

The staff member using this office will serve as the placement director for the College for both full-time and part-time work. This space has no special characteristics. There should be space for an office desk, chair, two side chairs, a filing cabinet, and a bookcase. A bulletin board 4 feet in length is desirable just outside the office area. Space outside the office should be provided for a secretary and filing and storage space. (See secretarial space.)

Admissions, Registration and Records Office (1,200 square feet)

Some of the operations in this office include:

1. Initial contact with prospective students
2. Evaluation of records
3. Preparation of student files
4. Issuance of transcripts
5. Issuing grades
6. Other

This area is to serve as the space in which to keep all student records and to do much of the student accounting. If possible, this space should be near the business services offices. The data processing equipment to be used by this office will be housed elsewhere but nearby in the administrative complex.

There will be a separate Admissions Office and secretary's office and a separate Registrar's Office and secretary's office.

These offices should be accessible to the students, parents, faculty, etc., through a readily accessible secretary's office. The secretary's office of the Registrar also should connect into the student lobby space in front of the service counter. The specifications for these offices are as previously detailed for the other offices.

The service counter, possibly 24 feet long including entrance gate, should be, as in the business services offices, located 6 feet from the front wall and have 6 feet of service area behind it. The counter should be 27 inches wide with cabinet space underneath for supplies such as registration materials, catalogs, schedules, etc.

In addition to the 144 square feet (6 feet by 25 feet) in front of the counter for the student area and the 144 square feet behind the counter for the service area, there should be three other areas accessible from the inside lobby as follows:

1. Staff service area of 218 feet for clerical workers who will also have as their chief duty to wait on the people at the service counter. There will be three desks and secretarial chairs in this area along with three side chairs.
2. There is also a records room of 400 square feet where student records are processed--registration cards, add and drop cards, etc. Cabinets, portable filing cabinets on rollers for current student records (so as to be pushed into the fireproof vault at night), tables, desks, and chairs will be provided. A secretarial and key-punch room of 240 square feet will be used for punching student records for data processing, secretarial work for mailing out student reports, etc. There should be a key-punch machine with table and chair, a secretary's desk and chair, and two side chairs.
3. A fire-resistant storage space of 200 square feet is to be provided and accessible to the records room and the staff service area.

Other considerations include:

1. Location in close proximity to the Business Office.
2. Location near a parking lot for student and public access.

3. Location near the data processing facilities.
4. Noise from this area should be screened from other areas, although this area should not be isolated.
5. Good orientation and relationships to the counseling office are desirable.

Admissions Work Area
(800 square feet)

This is a workroom for the admissions, registration and records area and should be located adjacent to it. The following is the equipment needed for the space:

1. Xerox machine.
2. Addressograph stuffer.
3. Postage meter machine.
4. Four large tables for assembly.
5. Reproduction machines such as the duplicating and mimeograph machines.
6. Storage cabinets and work counters with sinks.

Director of Admissions Office
(120 square feet)

Space for the Director of Admissions should include a private office, adjoining space for his secretary, and a storage room for supplies and files. A comfortable office immediately accessible to the admissions, registration and records area is desirable. The office should have space for an office desk and chair, two side chairs, and a bookcase for reference books and college catalogues.

The secretary's office can be in conjunction with secretarial space for the Scholarships, Loan and Placement Office and the Registrar's Office.

Registrar's Office
(120 square feet)

The Registrar's Office should contain approximately 120 square feet and should be located adjacent to the admissions, registration and records area. The Office should be equipped with an office desk and chair, two side chairs, sufficient book shelves for reference materials, and college catalogues.

An adjoining area should provide space for secretary and waiting area for the Registrar's Office. Space is needed for a secretary's desk and chair, two side chairs, and storage for two files and office supplies.

Secretarial Space
(800 square feet)

This space should be distributed to provide the secretarial space needed for the student personnel services area. Approximately 300 square feet should be provided for the secretaries to the Director of Admissions, the Registrar, and the Scholarship, Loans and Placement offices. The requirements of these spaces have been described in connection with the offices they are to serve.

Approximately 300 square feet of typing space should be allocated to the counselors and for secretarial typing and clerical space. The equipment requirements for this space are for two secretarial desks and chairs, ten filing cabinets, a receptionist desk and chair, and a desk and chair for a file clerk.

Table 4.1 summarizes the facility requirements for the student personnel area.

Table 4.1: Space Considerations for Student Personnel Services for the South Campus of Seattle Community College

Type of Space	Number of Units	Approximate Net Space
Director of Student Personnel Services (Including Secretary)	2	(a)
Counseling, Reception and Information Area	1	600
Counseling Offices	15	1,500
Testing/Conference Rooms	2	600
Health Services Area	6	800
Scholarships, Loan and Placement Office	1	120
Admissions and Records Office	1	1,200
Director of Admissions Office	1	120
Registrar's Office	1	120
Large Group Testing (50 to 200 or more)	1 or more	(a)

Table 4.1 (Continued)

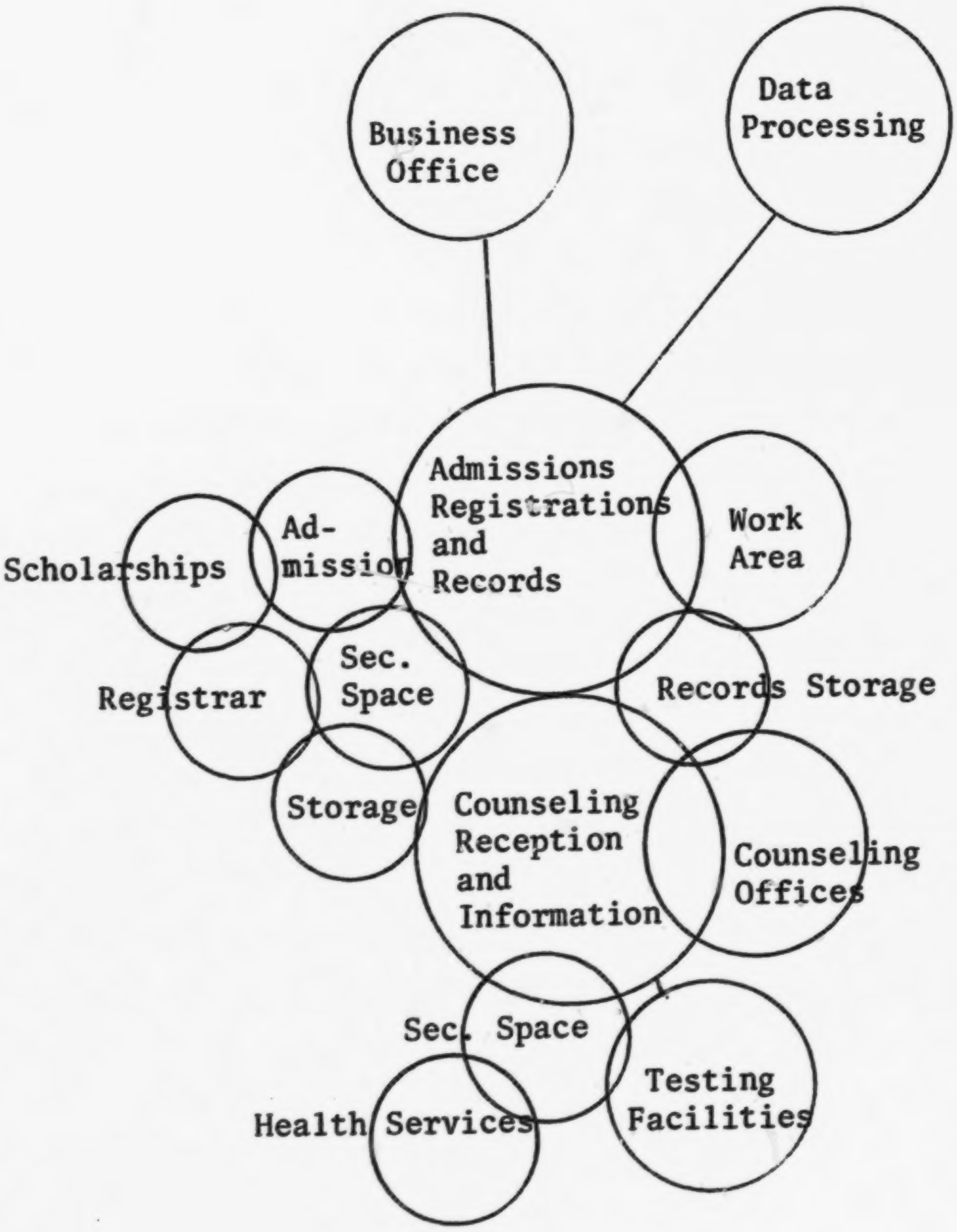
Type of Space	Number of Units	Approximate Net Space
Secretarial Space	2	800
Admissions Work Area	1	800
Storage Room	2	400
TOTAL		7,060

[a] Requirements are included elsewhere in this Report.

Functional Relationships

Figure 4.2 shows the desirable functional relations of the student personnel services area.

Figure 4.2: Relationships of Student Personnel Services Functions



CHAPTER V

FACILITIES FOR THE COLLEGE COMMUNITY CENTER

Philosophy and Objectives

To accomplish its purpose, the community college must have available a variety of physical plant spaces--space for instruction, for administration, and for the services that facilitate administration and support instruction.

Additionally, there is another dimension of space which is essential if the community college is to accomplish its objectives. This additional dimension of space is that needed to facilitate the interaction of all students, faculty and staff on campus through both informal and formal activities that are social, cultural, intellectual and recreational in nature. These facilities should contribute to the psychological needs of students, faculty and staff by providing spaces designed for individual relaxation, for individuals to relate to peer groups, and for informal recreational activities. Provision should be made for formal social activities such as banquets, luncheons and organized group meetings involving faculty, staff, citizens and students or a combination thereof. Finally, there is the need and the desire on the part of faculty, staff and students to be alone or with peers at selected times.

Spaces must be provided that isolate faculty and staff from students and students from faculty and staff. It is suggested that generally four types of spaces are needed for the College Community Center; space for the isolation of faculty and staff from students, space where faculty and staff and students may be together, space for the isolation of students from faculty and staff, except for supervision, and finally, service supporting spaces.

Generally speaking, the space for the College Community Center should have characteristics which include the following:

1. Expresses a community feeling or attitude.
2. Gives unity to the student body and to the campus as a whole.
3. Provides an appropriate setting for many types of social, cultural and recreational activities.
4. Enhances the student's sense of belonging.
5. Lends expression to individuality as well as "togetherness".
6. Emphasizes social aspects yet expresses an intimate attitude in most of its individual elements.
7. Provides spaces for its occupants that permit "isolation", "togetherness" and "transition" from one to the other.

The community college campus could perhaps be looked upon as a community of persons with a common set of goals--self improvement and a dedication to the realization of a better life for each other and for their fellowman. It is in these facilities that the architecture should give full expression to the democratic ideal of human dignity and the place where the American social order should become a potent force in the life of each student.

The Grouping of Services and Activities for the College Community Center

Student Services and Activities

The supermarket approach to student activities and services and the dispersal of these services and activities to all parts of the campus can each be strongly defended. In terms of the criteria suggested, it would appear that some of these services and activities are closely related to instruction and some to administration. This would suggest a logical grouping of student services and activities for the Community Center to include:

1. Those not primarily related to instruction or administration.
2. Those related to the commuting student with long periods on campus when he has no classes.

3. Those related to the student who works part-time and intersperses work with study.
4. Those related to the many students who come from homes where books, paintings and discussion about art, music and world affairs are extremely limited.

The services here considered as appropriate for a center for students are discussed in the following paragraphs. The function rather than the service is emphasized.

Food

Although it may be desirable to provide some food facilities on other parts of the campus, the Community Center should have the major concentration. Included would be a cafeteria, dining halls, a coffee shop, and a banquet room with capacity for at least 300 (for college, conference or community groups). The banquet room could be designed for multiple use for meetings, discussions and exhibits as well as for banquets. Facilities for the various kinds of food services at varying times and to various groups is considered in the chapter on Food Services Occupations. There is assurance that the desire to provide a high quality training program will not result in lessening of the emphasis on student services.

Some additional factors to consider in planning for food services are:

1. Serving lines in the cafeteria should be designed to accommodate possible expansion in seating.
2. Room service can be provided for committees wishing to have food with meetings.
3. The specifications contained here are only for seating and not for food preparation.
4. Consideration should be given to possible service of food on patio or sidewalk cafe-type areas.
5. Attention should be given to the future of food preparation possibly with arrangements for the diner to cook on equipment provided for his own meal chosen from a wide variety of pre-packaged foods.
6. All students serving food will have vestibule or other previous training, and some will be continuing "on-the-job" training.

Social Activities

Lounging, listening, viewing and study areas with special attention to comfort and beauty should be provided. Attention should be given to the variety and size of rooms with appropriate use of plants, art and artifacts to secure the desired effects. Clocks and other visual signals might be installed to indicate class change. There is no conflict between this service and the viewing and listening service provided in the Community Center which is primarily informal and recreational in nature. The viewing room might request a certain TV channel for a baseball or football game or a race. The listening room might request a radio channel, or request records to play. The importance of a variety of rooms cannot be overemphasized. Some might be "no smoking", some for quiet discussion or study.

Student Government an Student Activities

The difficulty of securing continuity of student councils and other student activities on a two-year campus requires much attention. Certainly the student government should be representative of all students in all programs. At present, the student council is effective in:

1. Providing funds for the improvement of the College, e.g., the public address system and office equipment.
2. Encouraging attendance at the symphony, opera, etc.
3. Preparing a newsletter.
4. Encouraging clubs.

The major considerations are to provide space for student offices, student publications, and a conference room for use by the student council and clubs. It was suggested that it might be useful to have some faculty offices nearby for use by club sponsors. While most faculty would likely prefer to use their own offices and to have the club meetings in their own instructional areas (for example, a French Club in the Foreign Language Laboratory), some might find it convenient to also share an office with other club sponsors in the Community Center.

Book Store

The suggestion of a PX-type store providing a wide variety of products and services such as is found at the University Book Store raised the question of space requirements. If this suggestion is followed, 8,000 square feet would likely be minimal.

Recreation

It is likely that most of the outdoor recreation would be the major concern of the Physical Education Committee. Tennis and golf certainly would be, but some attention should also be given to powerboating, sailing and other lifetime hobbies. For the Center, consideration should be given to providing for table tennis, billiards, chess, etc.

Faculty and Staff Facilities

Like the student on campus, the members of the faculty and staff need an occasional relief from the routine grind of instructional activities. Facilities for relaxation and social interaction with their peers are just as important to the faculty and staff as to the students. Consequently, facilities are needed for the faculty and staff to serve these purposes.

Separate dining and lounge facilities are described elsewhere in this Report. The faculty and staff lounge facilities should be a part of the College Community Center. Also needed are two rooms for faculty and staff recreation, perhaps these should be adequate for a few table tennis and billiard tables, card tables, a smoking area, and an informal reading area.

Space Components and Relationships

As shown on the following chart, the five major components of the Community Center are the facilities related to food, lounge, recreation, book store, and student affairs. It was believed that some attention should also be given to student information. It was agreed that the major emphasis on information would likely be in instructional-related services. However, no opportunity should be overlooked to encourage, stimulate and instruct students. Thus, bulletin boards and informational media should be planned for use in the Community Center.

The close working relationship between the Community Center and the Instructional Resources Center, the student services related to curriculum and administration, and the parking area suggests the advisability for a physical proximity among these.

Additional Considerations

1. Cafeteria with movable planters could facilitate a wider variety of space use, i.e., a cabaret-type dance.
2. Banquet room could have multiple use for study, possibly converting to several separate rooms.
3. Space for food preparation is not included, see "Food Services" section.
4. One of the ladies restrooms should be designed as a powder room with appropriate fixtures.

Table 5.1 provides a summary of the recommended space guidelines for the College Community Center.

Figure 5.1 is a diagrammatic sketch showing the general physical relationships of the internal components of the College Community Center. Figure 5.2 is a diagrammatic sketch of functional relationships of the internal components of the College Community Center.

Table 5.1: Summary of Recommended Space Guidelines for the College Community Center for the South Campus of Seattle Community College

Function	Number of Spaces	Total Square Feet	Grand Total
Food Service			
Cafeteria	1	8,000 (movable planters)	
Student Dining	1	2,000	
Faculty Dining	1	1,500	
Furniture Storage	1	500	
Coffee Shop	1	800	
Banquet Room (put faculty and student dining areas together)			
			12,800

Table 5.1 (Continued)

Function	Number of Spaces	Total Square Feet	Grand Total
Lounge-Study			
Main Lounge	1	4,000	
Study Rooms	6	3,000	
Faculty and Staff Lounge	1	(a)	
Faculty Recreation Rooms	2	(a)	
			7,000
Activities			
Publications	2	450	
Student Office	1	400	
Conference Workroom	1	500	
Faculty (shared offices)	4	(a)	
			1,350
Book Store--PX-Type			
Sales Area	1	6,000	
Storage	2	1,000	
Shipping-Receiving	1	500	
Offices	2	240	
			7,740
Recreation			
Billiards-Table Tennis	2	3,500	
Games, Bridge, Checkers, Chess, etc.	1	1,000	
			4,500
Informational			
Displays	1	200	
Phones	1	100	
			300
Kitchen (and related)	4	(a)	(a)

Table 5.1 (Continued)

Function	Number of Spaces	Total Square Feet	Grand Total
Restrooms			
Depending on number of floors	6	1,500	
			1,500
GRAND TOTAL COMMUNITY CENTEI			35,190

[a] Requirements are included elsewhere in this Report.

Table 5.2: Comments on Some Space Characteristics for the College Community Center for the South Campus of Seattle Community College

A. Cafeteria

Approximate Area:	8,000 square feet
Seating Capacity:	350-400
Usage:	As a serving and dining area for approximately 1,500 students with 350-400 using the facility at one time.
Furniture and Equipment:	A mixture of four- and six-place tables with dining chairs. 55 four-place tables; 30 six-place tables; 400 dining chairs; suitable planters and movable screens.
Remarks:	Should be broken into several small units by the use of planters, arrangement of furniture, and movable screens. One or more of the subdivided areas might be carpeted. A scramble-type serving arrangement should be considered. See "Food Service" section for additional information.

Table 5.2 (Continued)

B. Dining Halls (2)

Approximate Area:	(a) 2,000 square feet (b) 1,500 square feet
Seating Capacity:	(a) 80-100 (b) 60-80
Usage:	(a) Available on reservation to student or faculty groups for luncheon or dinner meetings--when not in use, available for table service or additional cafeteria seating. (b) Available for table service at every meal period for faculty use.
Furniture and Equipment:	(a) 20 four-place dining tables with 80 upholstered dining chairs. (b) 15 four-place dining tables with 60 upholstered chairs.
Remarks:	Both rooms should be carpeted and the two areas should be arranged so that they can be put together to make a banquet room. See "Food Service" section for additional information.

C. Coffee Shop

Approximate Area:	800 square feet
Seating Capacity:	40
Usage:	By students--providing a basic short-order menu consisting of salads, soups, sandwiches, desserts and beverages. Used by approximately 40 persons at one time.
Furniture and Equipment:	A mixture of two- and four-place dining tables, 6 four-place tables, 8 two-place tables, and 40 dining chairs.
Remarks:	Coffee Shop will be serviced by satellite kitchen described under "Food Services".

Table 5.2 (Continued)

D. Main Lounge

Approximate Area:	4,000 square feet
Seating Capacity:	100-150
Usage:	Lounging, listening and viewing areas for students. A separate area for lounging, for viewing and listening should be considered. May be used for recitals or similar events.
Furniture and Equipment:	Informal lounges--lounge chairs for 150 students, television sets, audio selector equipment, and audio playback system for music, etc., planters and screen dividers, use of equipment for public address systems including microphone and speakers. Adequate electrical outlets possibly spaced on 10 foot centers around perimeter of room.
Remarks:	The large area should be divided into at least three smaller areas to serve the functions of lounging, listening and viewing. Room appointments should be conducive to these activities. Acoustical treatment is vitally needed.

E. Study Rooms (6)

Approximate Area:	500 square feet each--total, 3,000 square feet
Seating Capacity:	15-20 each
Usage:	Informal study rooms equipped for informal reading, writing and small group discussions in a more informal setting; provisions for RAMP services should be possible.
Furniture and Equipment:	Tables, chairs, upholstered lounges and chairs, TV sets, reading carrels, etc. Each room should be furnished differently, if possible. Each should contain seating for writing,

Table 5.2 (Continued)

	reading and informal discussion-type activities for 15-20 students. Each room should also contain a television set and an audio system. Open shelves for book storage should also be provided. Coat hangers should be provided.
Remarks:	At least one room should be for non-smokers. Rooms should be carpeted and should have good acoustical treatment.

F. Activity Areas

1. Publications

Approximate Area:	2 rooms at 200 square feet each--total, 400 square feet
Usage:	These two rooms are to be used for the preparation of student newspapers, a College annual, and similar activities. They may also serve as workrooms for student council activities.
Furniture and Equipment:	Each room should be equipped with an 8-foot counter with sink with cupboards above and below, running water, and electrical outlets. Each room should contain two 3 feet by 8 feet worktables, 2 typing tables and chairs, and 2 typewriters. A storage closet should be available in the room. Also, two legal size filing cabinets.

2. Student Offices

Approximate Area:	400 square feet
Usage:	This area will serve as the offices for student leaders. It should be close to faculty adviser and to conference and workrooms for student activities.
Furniture and Equipment:	This area should contain 4 offices with 3/4 height partitions. Each office should contain a filing cabinet,

Table 5.2 (Continued)

	a work space with book shelves above and some shelf or cupboard storage below, an upholstered office chair, and a side chair.
Remarks:	Visual isolation is desirable; optimum noise control is needed.
3. Conference and Workrooms	
Approximate Area:	500 square feet
Seating Capacity:	20-50
Usage:	This room should be planned as a conference room for student activities. In a conference arrangement, it should seat 20-25 students around a table. In folding chairs the room should seat 50-60 students. The room may also be used as a student work area on occasion.
Furniture and Equipment:	25 conference-type chairs, three 3 feet by 8 feet tables, 60 folding chairs, and equipment for sound system and TV reception.
G. Book Store	
Approximate Area:	7,740 square feet
Usage:	Provides a variety of necessary services to faculty and students --sales of books, paper and instructional materials, ticket sales, etc.
Furniture and Equipment:	Sales Area: Two cash registers, turnstiles, display cases and counters for merchandise, and checkout counters. Offices: Located near front of sales area, equipped with typewriter, calculator, posting machine, filing cabinets, and storage. Shipping and Receiving: Located at the rear of sales area and provided with a suitable loading platform.

Table 5.2 (Continued)

	A work counter, sink with hot and cold running water, platform scales, and dolly and hand truck.
Remarks:	Consideration should be given to handling long lines of students which form during the beginning of a new quarter. Shelves or open compartments for student books should be available at the front of the store, approximately 30 are desirable.

H. Recreation Areas (3 rooms)

Approximate Area:	4,500 square feet
Usage:	Recreational activities for students --one room for billiards, one for table tennis, and one for card games, chess, checkers, etc.
Furniture and Equipment:	Billiards Room: Billiard tables, cue racks and sticks, and side chairs or lounges for players and observers. Table Tennis Room: Table tennis tables and nets, storage cabinets for balls and paddles, and side chairs and lounges for players and observers. Card Room: Card tables, chairs for players and observers.
Remarks:	Acoustical control and location of these areas is important. Exterior access should be provided by a common corridor from these areas.

Figure 5.1: Facility Relationships - College Community Center

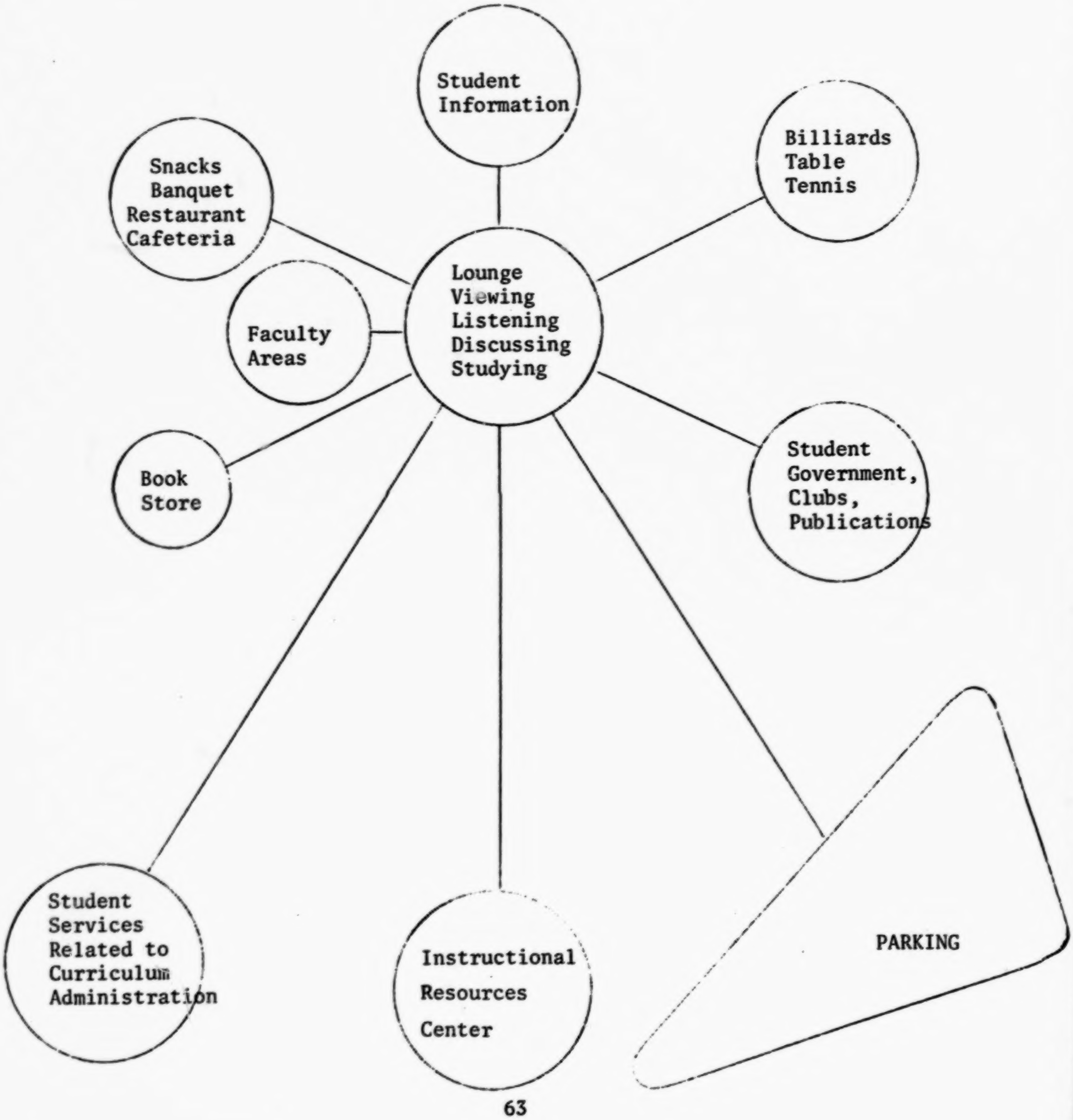
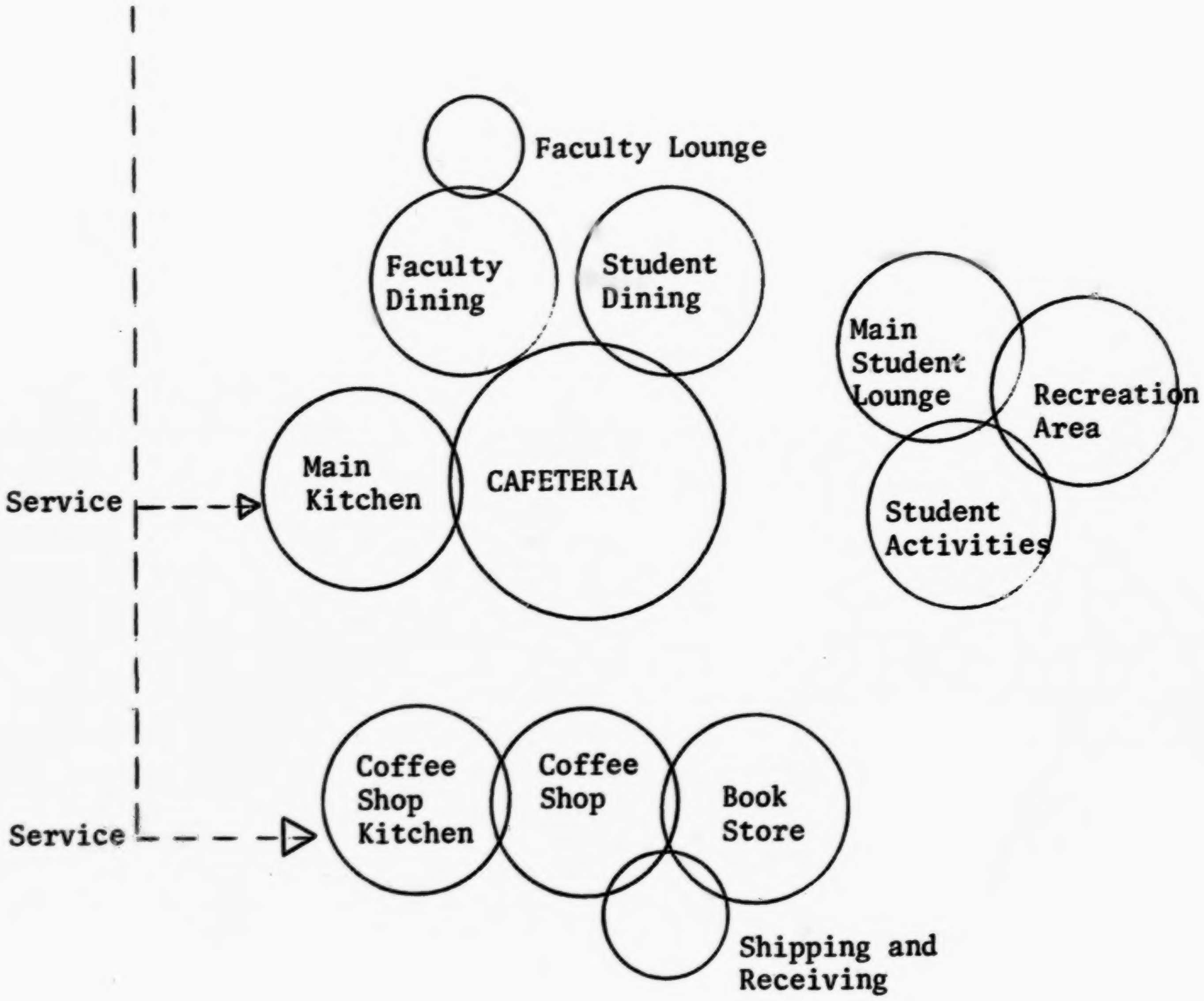


Figure 5.2: Diagram of Functional Relationships of the Internal Components of the College Community Center



CHAPTER VI

INSTRUCTIONAL RESOURCES CENTER

Introduction

The Instructional Resources Center is one of the most important instructional units in the College. It is a facility which will serve both faculty and students. It is a place for creative learning activities which are not necessarily a part of the usual formal classroom instruction. The Instructional Resources Center unifies all functions related to instruction and provides an opportunity for students and faculty to carry on individual research and independent study.

The Instructional Resources Center has evolved from the traditional basic library and now consists of those bibliographic materials and educational media supportive of instruction. Three basic elements are generally included as a part of the Instructional Resources Center: (1) the administration, storage and circulation of instructional materials and media; (2) the production of new instructional materials; and (3) the utilization of instructional materials and media. Many types of instructional resources are coordinated through the Instructional Resources Center, thereby assuring the coordinated and efficient use of instructional resources.

Administrative Relationships

The Instructional Resources Center on any one campus of the College should enjoy considerable autonomy, yet its activities should be carefully coordinated with those of the Centers on other campuses. For example, the College should avoid duplication of certain rarely-used holdings but make such materials available by inter-library loan to the various campuses. Administrative philosophy reflects in the use of facilities, and administrative relationships influence their design.

Because this is true, and because the Instructional Resources Center is such a vitally important facility on campus, the following recommendations are made:

1. That each campus Instructional Resources Center Director report in a line relationship directly to the chief instructional executive on campus, and
2. That a staff officer at the central administrative center coordinate the Instructional Resources Center activities of the multi-campus system and assist each campus Instructional Resources Center Director in the mechanics of Instructional Resources Center administration.

These recommendations are summarized in the organization chart of Figure 6.1.

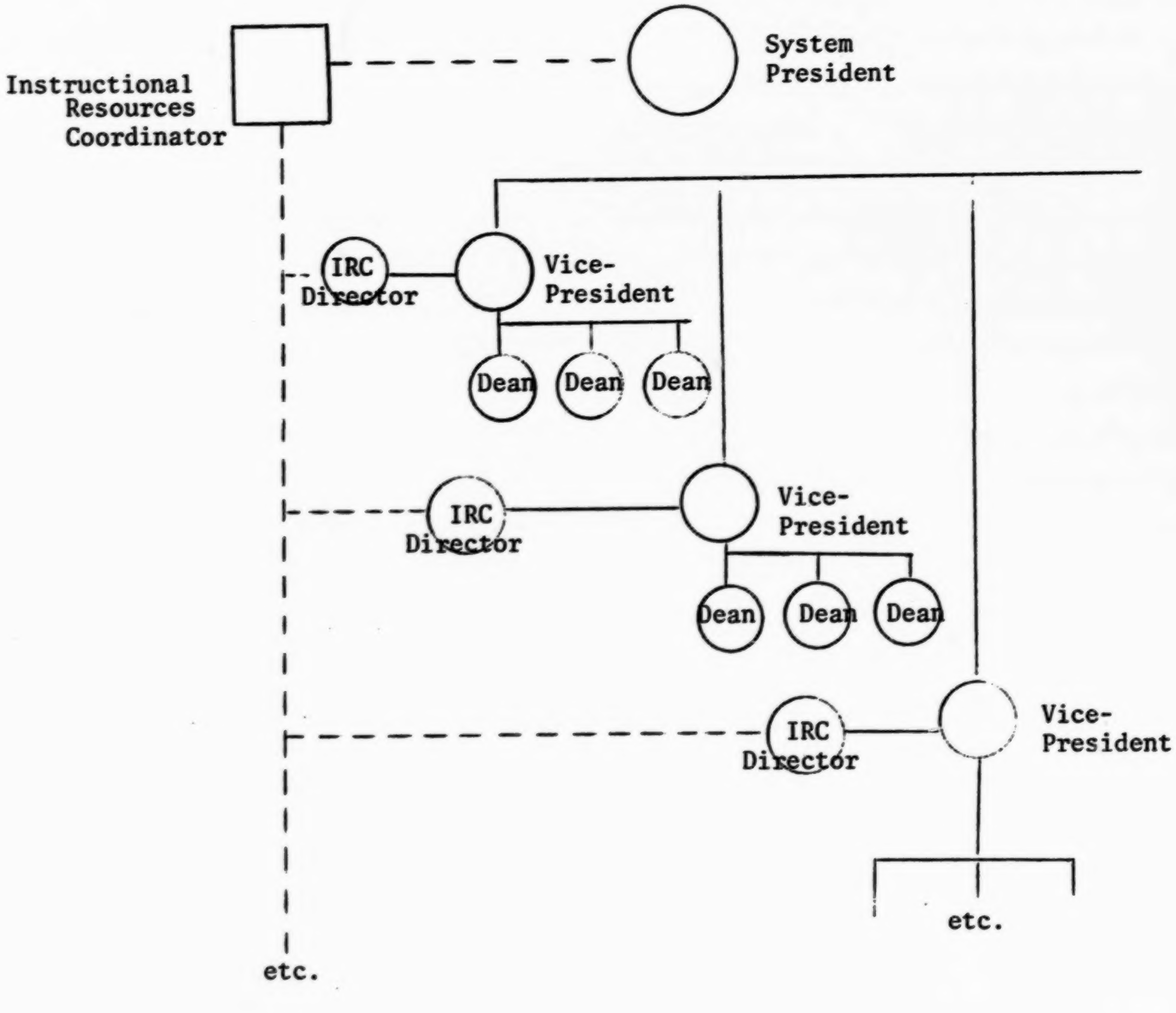
It is anticipated that the Instructional Resources Center staff officer in the central administrative office will provide for the services on all campuses which include the following:

1. Cataloging.
2. In-service training for campus Instructional Resources Center personnel.
3. Mechanical aspects of purchasing.
4. Inter-library loan services.
5. Avoidance of duplication of rarely-used holdings.
6. Dispositions (weeding the collections).
7. Exchanges.
8. Relationships with other institutions.
9. Information service on innovations in Instructional Resources Center methods and techniques.

The campus Instructional Resources Center Director will be responsible for other phases of the operation which will include:

1. Ordering
2. Cataloging materials, etc.
3. Producing materials and aids
4. Maintaining aids and media
5. Inventory
6. Storage
7. Distributing
8. Previewing
9. Broadcasting
10. Programming
11. Evaluating
12. Informing
13. Guiding

Figure 6.1: Recommended Organization Chart for Administration and Coordination of Instructional Resources Center



Materials which require ordering, cataloging, maintaining, storing and distribution are:

1. Books
2. Periodicals
3. Pictures
4. Models
5. Slides and film
6. Microfilms
7. Recordings and tapes
8. Maps and charts
9. Radio
10. TV receivers
11. Screens
12. Projectors
13. Recorders
14. Teaching machines

Conceptual Framework

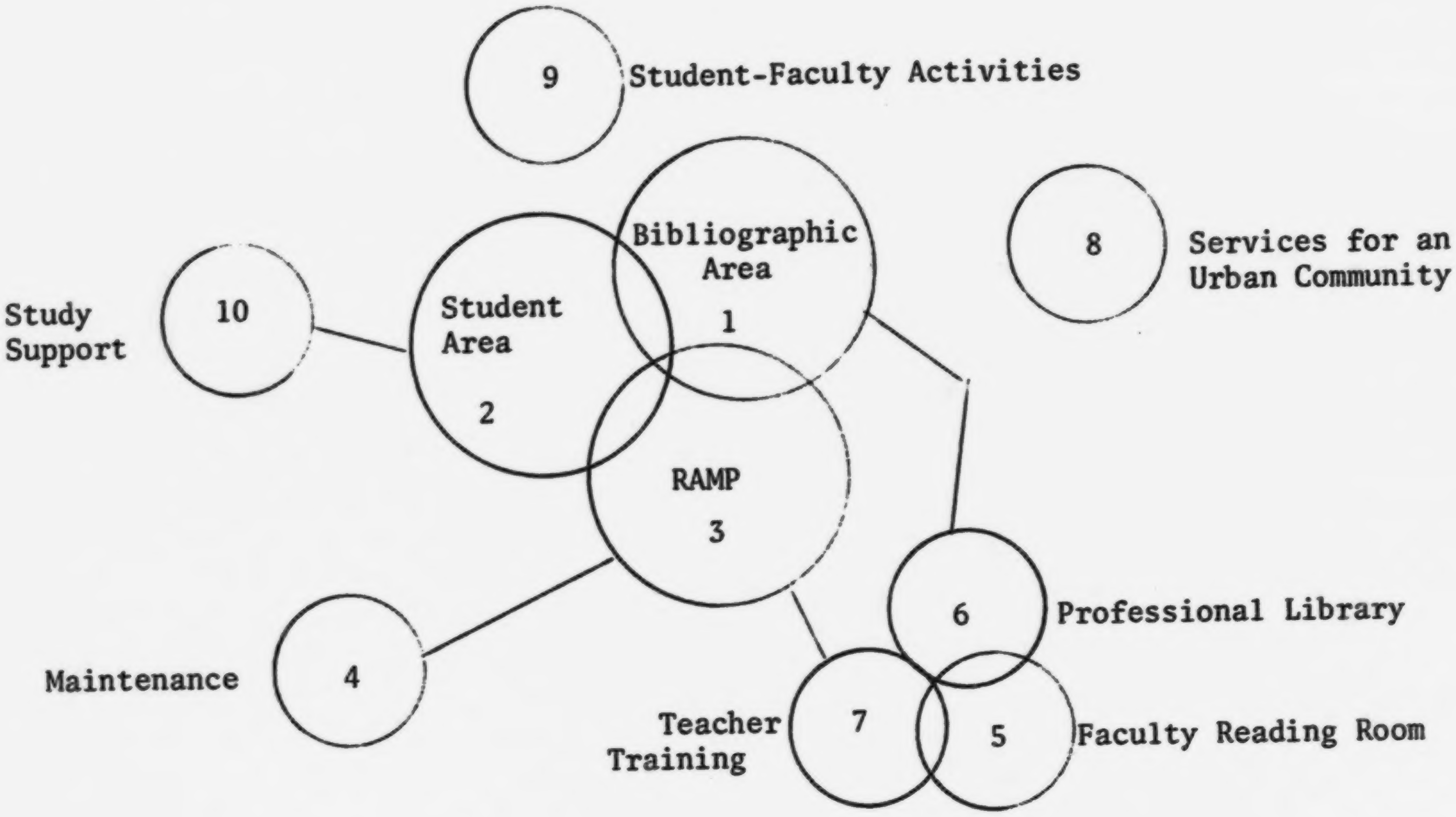
The Instructional Resources Center is conceived as having three major components and a number of supporting elements. This conceptual framework is represented diagrammatically in Figure 6.2. In the Figure, "Bibliographic Area" refers to those spaces devoted to stacks, circulation, reserve and general administration. It is intended that a carefully selected list of appropriate titles in the form of books (not more than 30,000), periodicals, documents, tapes, disks, microfilms, and films be housed and circulated here. The term "Student Area" refers to reading and study spaces, facilities for the use of programmed materials, electronic carrels, and certain phases of the College's Pre-College Program. The term "RAMP" refers to spaces devoted to Resources for the Audio-Visual Mode of Presentation, a system which will be described later in this chapter. The other Instructional Resources Center functions for which spaces are to be devoted include in-service teacher training, a professional library for College staff, special services which can be offered an urban community, reception areas for the intellectual confrontation of students, faculty, institutional officers and visitors, and support for the study function including typewriters, tape recorders, and the like.

Personnel to be Housed

The personnel who will be housed in this facility include:

1. Staff--5½ professional and 3½ clerical. In addition, approximately 6 student assistants will provide additional aid to the staff.

Figure 6.2: Conceptual Framework for an Instructional Resources Center



1. Stocks, circulation, reserve
2. Materials for remedial, repair, salvage, and development functions
3. Resource for the Audio-Visual Mode of Presentation
4. Repair, maintenance, inventory of instructional devices
5. Area for faculty study, research, reading
6. Professional library in the community junior college and related fields
7. Facilities for in-service teacher training in use of educational media
8. Those special services the IRC may furnish an urban community
9. Formal reception area for intellectual confrontation of students, faculty, institutional officers and visitors
10. Typewriters, recorders, other devices supporting the study function

The activities of these staff members should include:

a. Selecting and ordering materials.

b. Arranging for storage and classification of materials.

c. Arranging for distribution of materials.

d. Advising and helping students.

e. Helping faculty.

2. Faculty--approximately 250 faculty members teaching a wide range of courses will be using this facility both for personal preparation and for assignments to students. The faculty need, in particular, a place where they can study, read or browse without interference from others. These persons also need a place to work with the staff in planning visual lectures, arranging for chart development or illustrative materials, slide production, etc. A place for faculty to develop programmed learning materials is also needed.

3. Students--All students of the College will use this facility. They range between the extremes in respect to abilities, needs and interests. These students will study alone and in small groups. They will need carrels, tables and small conference rooms. Students in other situations have indicated preferences for studying alone with relative quiet, in small areas no larger in size that the average classroom, or in small groups of two or three other students. These preferences should be provided for.

4. Personnel of RAMP are discussed in a later section of this Report.

Space Guidelines

Total recommended space	32,245 square feet

Total seating space should provide for at least 1,000 seats. This includes reading rooms, carrels, conference rooms, etc.

Spaces include:

Classrooms (for expansion) (4 @ 600)	2,400
Reading Areas	16,800
Reference Areas	1,500
Reserve Reading Room	1,000
Stack Space (@10 volumes per square foot)	3,000
Listening Rooms	1,000
Auxiliary Rooms	3,025
Office (6 @ 120)	720

Conference Rooms	1,200
Storage Space, etc.	600
Curriculum Laboratory	1,000
TOTAL	32,245 square feet

These spaces are approximate and may be subdivided in several different ways. There may be as many as four reading areas of 4,200 square feet each. Stack space should be planned so that it may, by choice, be changed from open to closed stacks with little difficulty either in facility arrangement or in terms of providing the supervision needed for the security of books and other instructional materials. Current plans are to limit the book collection to not more than 30,000 active books for circulation. However, four classrooms are to be planned in conjunction with the Instructional Resources Center to provide for future expansion should it be necessary.

Space Descriptions and General Facility Requirements

General

1. Seating for 1,000 students in reading, reference, reserve and conference rooms should be provided. At least 600 seats shall be in study carrels.
2. A very careful analysis of the relationships between the various functions of the Center should be made. If the services of the Center are to be most effective, this relationship needs to be planned into the building. The Center itself should be located on the campus at a point where most of the campus cross traffic meets. Easy access to a service drive for deliveries is also essential. Accessibility to parking areas used by the general public is important. Ramps should be provided at entry ways into the buildings. Entry ways should be free from obstructions. The use of kick plates or other protective devices on doors through which equipment is moved is highly desired.
3. The circulation desk should be in a prominent space, easily identified, and near the major exit. Attractive exhibition areas should be provided in the vicinity of the major entrance. Interior walls and furniture arrangement should be flexible so that they may be rearranged to meet changing functions.
4. Noise-producing areas such as previewing, testing and repairing equipment, auditioning, preparation of teaching materials, distributing equipment, and similar activities should be isolated from the reading and study areas.

5. Reading areas should be planned for varied types of activities. Areas for both "buzz" activities and "quiet" activities should be planned.

6. Individual study spaces should be provided with electrical outlets for use of listening devices, television sets, teaching machines, etc. Attention to lighting and ventilation is most important.

7. Some students want a place to study where smoking is permitted; others are repelled by cigarette or cigar smoke. Consideration may be given to a space where smoking may be permitted without offense to others.

8. Careful attention to exit control is essential. All students should pass by the charge-out desk upon exiting from the Center. Alternate exits should be planned as emergency exits only.

9. Conference rooms should be arranged and designed for convenient visual contact with the reading room or staff offices. These rooms should be treated for sound.

10. Film preview spaces should be large spaces for eight or so persons. They should be treated for sound and have adequate electrical outlets. A dimmer light control is desirable. A minimum of three such spaces are needed.

11. The card catalog should be near the circulation desk. This catalog should list all related materials. The reserve bookshelves should also be in this area of the facility.

12. Storage for equipment should provide shelves and storage units for orderly and organized storage of audio-visual equipment, projectors, recorders, equipment carts, maps, screens, globes, dioramas, models, exhibits, film, filmstrips, slides, tapes, recordings, pictures, specimens, etc.

13. The production area requires a darkroom, wide work counters and/or layout tables, 4 to 6 electrical outlets to carry the load of duplicator and small power tools, sink, tool cabinets, and storage space for materials. Space for 3 to 4 drawing boards and for art construction work should be provided.

14. Carpeting or similar floor covering is necessary in all reading and conference areas in order to provide sound control. When properly planned, carpeting can be as economical to install as other materials.

15. Good lighting throughout the reading room is essential. There should be no "dark spots".

16. Access from the outside delivery room to the room where cataloging and classification of materials is carried on is essential.

17. Audio-visual equipment storage should be readily accessible to the exterior or to a corridor leading directly to the exterior.

18. Control over all exits from the reading rooms is necessary.

19. The use of automated systems for control of books and for assessing circulation rate is desirable. Automated check-out of books and other bibliographic material should be investigated.

Reading Areas

These are the areas where students will study, read and carry out research using materials available in the Center. Placement of stacks for books, tables, chairs, etc., should be planned in the beginning rather than fitted into the completed structure. Good lighting, ventilation, sound control, and visual control are all basic essentials. Approximately 600 of an estimated 840 seating capacity in reading room areas should be in individual study carrels. The remaining 240 capacity should be in four- and six-place tables with chairs.

Reference Room

Storage of encyclopedias and standard reference volumes will require specially designed shelving in this area. Other characteristics should be similar to the general reading room. Shelving should accommodate 1,000 volumes. At least 60 students should be accommodated at four- and six-place tables with chairs.

Reserve Reading Room

This is a place where close supervision by the Center staff is required over the materials held on reserve. A secure area for shelving and a check-out procedure are required. Seating should accommodate at least 40 students at four- and six-place tables with chairs. Shelving should accommodate at least 1,000 volumes.

Stack Areas

Stack areas should be planned for easy convertibility to either open- or closed-stack control. Stacks should accommodate at least 30,000 volumes. The need for modifying the number of books and the variety of other materials from year to year should be recognized.

It is expected that book selections will be kept current on the basis of book circulation information and that books not asked for will be discarded. Stacks should be easily expanded should the need arise.

Listening Room

Space should be provided for individuals to listen to tapes and other recordings. The control room (area) should have visual contact with the entire area. At least 100 stations should be provided with a random dial access system for the retrieval of data, information, etc., from tapes, etc., from the control room.

Radio and Television Production

This area will require space for construction of props and sets as well as broadcast studios. A control room is required as well as storage space for electronic hardware. The need for color will require special lighting arrangements. See RAMP facilities section.

Periodicals Room

Storage for recent periodicals and micro-filmed periodicals is needed. Readers for periodicals require individual carrel space and light control. At least 300 to 500 periodicals will be made available to students and faculty. Both display and shelf space for back issues of periodicals should be provided.

Office and Auxiliary Rooms

Several spaces will be required for bringing materials into the Center and preparing them for placement on shelves and for distribution. Work counters which provide hot and cold water are required. Space for drawing boards, a darkroom with enlargement and other equipment, and space for production of instructional materials (a small workshop with appropriate tools) is needed. Staff offices need not necessarily be together. Staff restroom facilities should be accessible to offices. Shelving will be required in all offices.

Conference Rooms

These rooms (four of them) should hold from 10 to 25 persons for small group meetings. Conference-type tables and chairs will be the major equipment. Glass windows facing the general reading rooms are usually desirable. Chalk boards and projection screens are desirable. One such room should be planned for students to make up exams with a two-way sound monitor system between the resource specialist's office and the conference room.

Storage

General facilities for storage should be associated with the offices and work areas. There should be at least 600 square feet.

Study Areas

The Instructional Resources Center should not be the only place on campus designed to provide study spaces for students. Scattered among the classroom areas there may be alcoves designed to serve this purpose. These areas should be smaller than a regular classroom with visual contact through glass windows with adjacent hallways. Study carrels are considered the most appropriate furniture for studying, and proper ventilation is particularly important. These areas should be near to offices and classrooms so that students may be able to contact faculty members while they are studying.

Typing Rooms

At least one large room should be provided for student typing and copy work. At least 10 typewriters (coin-operated) and one coin-operated copy machine should be made available in the Instructional Resources Center.

RAMP: The Resources for the Audio-Visual Mode of Presentation

The Instructional Resources Center at the College will be concerned vitally with assisting faculty members in their professional instructional activities. Facilities are to be provided which will enable such assistance to be efficiently and readily given. These facilities have already been described in a document prepared for the College.[1] The following is taken from that document.

RAMP

An important part of the total instructional program of any institution of higher education is carried out by means of audio-visual materials. Likewise, an important fraction of the equipment maintained on a college's inventory consists of the paraphernalia and devices by which such audio-visual materials are presented or displayed.

That audio-visual materials support in instruction and contribute to learning is axiomatic and requires no comment. On the other hand, it is worthwhile to note the following:

1. Audio-visual materials are effectively used only when all conditions related to their use contribute optimally.
2. Certain new materials, techniques and devices in the general audio-visual area have recently been developed.

Both of the comments just listed have important implications for college teaching. Community colleges especially--because of their expressed dedication to excellence in instruction--will be vitally concerned both with maximizing the factors contributing to effective use of these materials and with new developments in the field.

This document is a proposal for a system wherewith the College can advantageously organize and utilize all available audio-visual materials. The code name RAMP has been coined to designate this system, RAMP being an acronym for "Resources for the Audio-Visual Mode of Presentation". Included here are descriptions of the components and facilities needed to implement the proposed system; suggestions for its organization, operation and utilization; and estimates of the staff and services which it will require.

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[1] Associated Consultants in Education, Inc., *RAMP: A Proposal for the Philosophical Foundations and Organizational and Operational Structure of the Audio-Visual Division of the Materials Resources Center*, Seattle, Washington: Seattle Community College, July, 1966 (Paper Prepared for the General Planning Concepts Committee).

The RAMP System

RAMP consists of all the activities related to: (1) the procurement, production, processing, inventory, storage and distribution of audio-visual materials and supplies; and (2) the procurement, inventory, storage, maintenance, repair, distribution and operation of all devices and equipment related to the display of audio-visual materials.[2] Thus, RAMP is concerned with all aspects of the use of such materials and equipment. It is, in fact, to be concerned even with the in-service training of teachers in the audio-visual area. Although the institution's total in-service teacher training program will encompass considerably more than just audio-visuals, these aspects are major ones so that RAMP will contribute significantly to the teacher training effort in the institution. RAMP also will have supervisory and administrative responsibility for broadcast and closed-circuit TV on campus. RAMP will originate materials from faculty specifications. It will procure them on faculty request. It will assist faculty members to manufacture materials. It will include administrative machinery to enable it to act as an advisory and coordinating body for all matters in its domain. Figure 6.1 indicates diagrammatically these relationships.

RAMP is a division of the Instructional Resources Center. Its personnel will report through a RAMP Director to the Instructional Resources Center Director and thence to the chief executive officer of the campus. RAMP services will be equally available to all instructional units of the College. Funding for its operation should be available through the main Instructional Resources Center budget, with appropriate charge backs to the operating budgets of the various instructional units of the College. While the charge-back system inaugurated must realistically reflect usage of RAMP services by the various instructional units, it must not be restrictive and delimiting in its nature. Adequate allowance for the use of RAMP must be made in the operational budgets of both the Instructional Resources Center and the other units of the College.

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[2] Important exclusions from the materials and equipment implied by this statement are those which are traditionally associated with a single specialized discipline and which conventionally constitute laboratory apparatus for such a discipline. Examples are microscope slides.

RAMP Materials and Equipment

The materials with which the RAMP system is concerned include the following:

1. 16 mm films (reel or cartridge).
2. 8 mm films (reel or cartridge).
3. Filmstrips.
4. Glass slides.
5. 2 inch by 2 inch slides (single or magazine).
6. Audio disks.
7. Audio tapes.
8. Video tapes.
9. Photographs.
10. Posters.
11. Charts.
12. Transparencies and overlays for the overhead projector.
13. Maps.
14. Globes.
15. Three-dimensional models.
16. Broadcast transmissions.
17. Closed-circuit transmissions.
18. Appropriate supplies for the manufacture, duplication, maintenance and repair of any of the above.
19. Others which may appear as developments in the audio-visual field.

The equipment with which the RAMP system is concerned includes the following:

1. 16 mm projectors.
2. 8 mm projectors.
3. Film-loop projectors.
4. Opaque projectors.
5. Overhead projectors.
6. Turntables and associated equipment for recording playbacks.

8. Television studios.
9. In-room television circuits.
10. Television view screens.
11. Broadcast receivers.
12. Screens.
13. Display stands for graphics, posters, etc.
14. Equipment and apparatus for producing all types of RAMP materials.
15. Equipment for delivery of RAMP materials and apparatus.
16. Equipment for the maintenance and repair of RAMP materials and apparatus.
17. Equipment for storage and inventory of RAMP materials and apparatus.
18. Other equipment which may become necessary as developments in the audio-visual field occur.

The Electronic Heart of RAMP

Many of the RAMP materials can be made available to the classrooms on campus by electronic transmission from a central location. Television view screens in classrooms, connected by cable to image initiation equipment in the Instructional Resources Center, can be employed for the majority of the displays of slides, 16 mm films, photographs, film loops, etc. To this end, image initiation equipment and receptor view screens should have color capability. Furthermore, telephone (or intercom) connections must be made from each reception station to the image initiation center. And finally, because of anticipated high usage demand on the image initiation equipment, it must have the capability of transmitting different information on each of six different channels simultaneously; receptor stations, similarly, must be able to select from the six channels of available transmission. The capability for expansion to 12 channels should be built into the system.

Image initiation can be accomplished either from a schedule submitted in advance or on demand by telecommunication from the classroom.

The image initiator must have the capability for transmission of "live" programs from studios or remote locations, 8 mm or 16 mm films, slides and transparencies, and opaque graphics, including photographs; it should be usable in video only, audio only, or audio-visual modes. The image initiator station should be an integral part of the television studios and must be located in the Instructional Resources Center. Image receptors should be located in approximately 50 percent of the classrooms on campus, with built-in capability for extension of receptor services to all classrooms.

The Non-Electronic System

Non-electronic devices will continue to support the RAMP system. For example, every classroom should be permanently equipped with an overhead projector, a screen mount and/or screen, and an adequate electrical service for use of RAMP equipment. The RAMP central office must be equipped and staffed to deliver, operate and return slide projectors, filmstrip projectors, movie projectors, etc. In addition, RAMP should maintain several portable video-tape recording units for in-room use in instruction, and several in-room closed-circuit TV systems for magnifying details of classroom demonstrations. RAMP should supervise one "multi-media" lecture theatre for use by schedule and reservation.

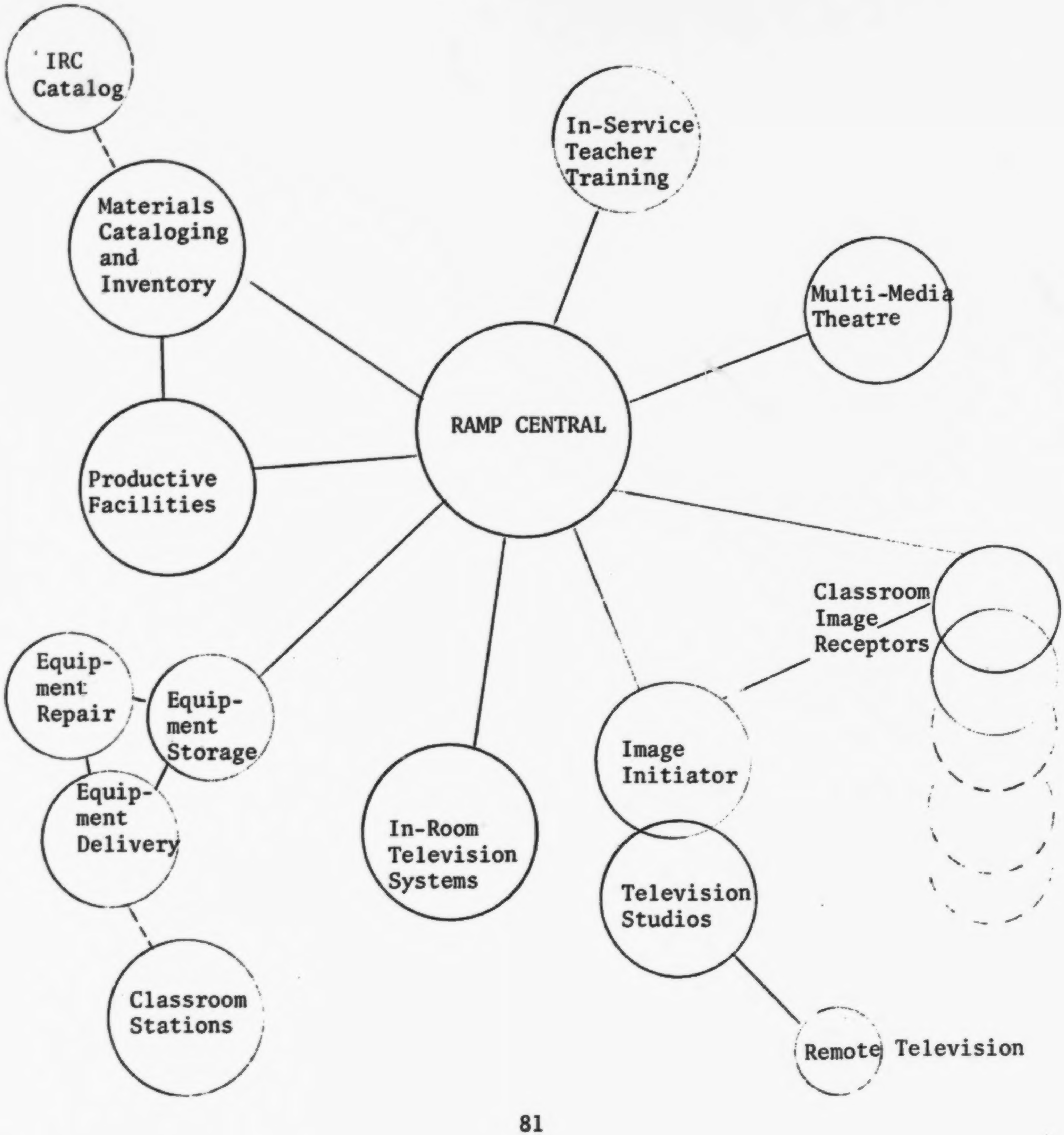
Figure 6.3 shows the functions and relationships of the electronic and non-electronic components within the RAMP system.

The Manufacturing System

RAMP must have a production department with capabilities for the following:

1. Producing transparencies from paper copy, photographs, or books.
2. Copy-camera work, black and white and color.
3. Still photography, black and white and color.
4. Photo-offset printing, black and white only.
5. Movie photography, black and white and color.
6. Micro photography.
7. Drafting, lettering, technical illustration, and other graphic arts.

Figure 6.3: Functions and Relationships Within the RAMP System



8. Model production (wood, paper, metal and plastic).
9. Audio recording.
10. Video recording.
11. Encapsulating film loops.
12. Photographic processing.
13. Slide binding.
14. Others which may develop.

The Personnel of RAMP

To implement the RAMP system, the following personnel functions are required:

1 RAMP Director.
1 Photographer.
1 Artist/Draftsman.
1 RAMP Librarian/Secretary.
1 Equipment Repairman.
1 TV Director.
2 TV Studio/Control Room Assistants.
6 Student Assistants (part-time) for delivery, operation, etc.

The Core Facilities of RAMP

Figure 6.4 presents a tentative concept of the spaces required in the Instructional Resources Center and elsewhere to implement the RAMP system. Figure 6.5 presents a tentative concept of a classroom which fully utilizes RAMP techniques. Figure 6.6 presents some details of the image initiation facilities for RAMP; and Figure 6.7 presents a concept for a "multi-media" lecture theatre, a special facility under RAMP auspices. Thus, Figures 6.4 through 6.7 outline the facilities utilized and required by the RAMP system. Table 6.1 provides a list of space considerations for RAMP Central.

Figure 6.4: Spaces Suggested to Implement the RAMP System

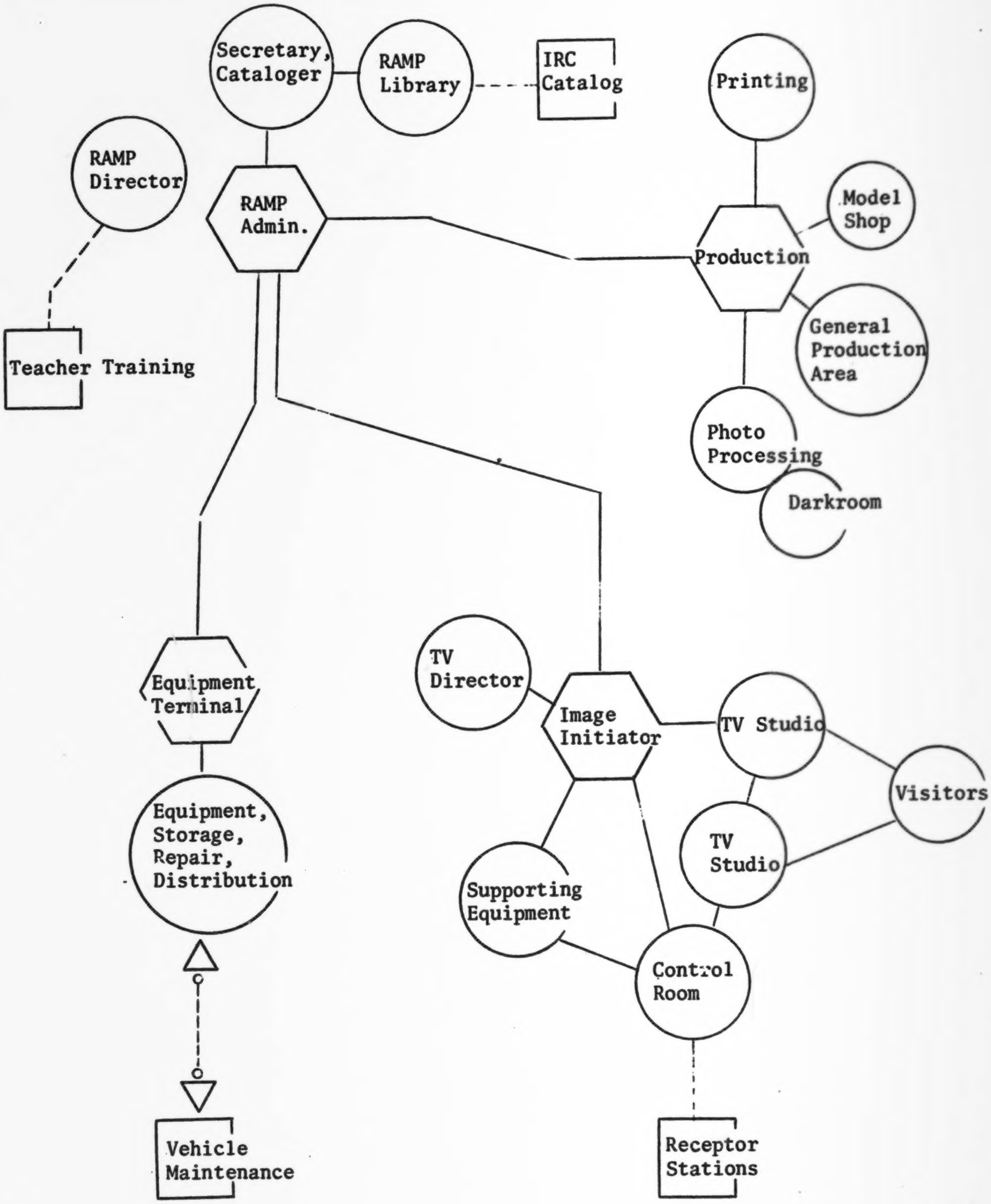
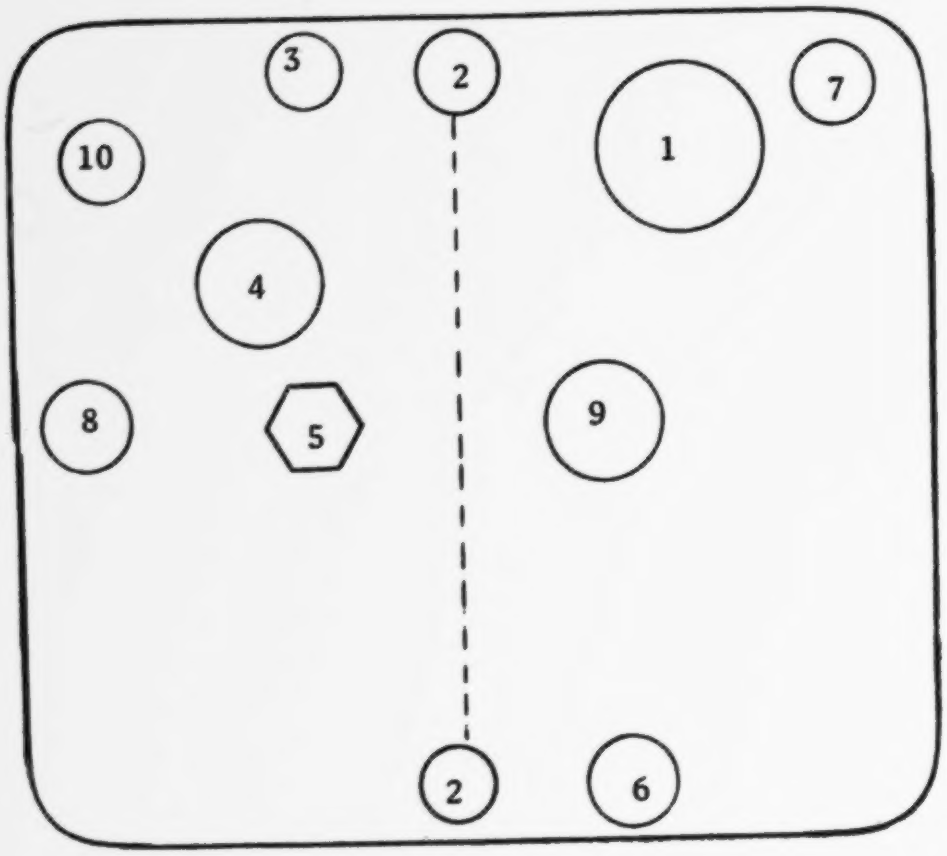


Figure 6.5: Components of a Classroom Area Wherein RAMP Services are Utilized



1. Receptor Viewscreen and Speaker (Remains permanently)
2. Speaker-Projector Jack (wired in as a facility is constructed)
3. Screen (remains permanently)
4. Overhead Projector (remains permanently)
5. Brackets for holding TV camera or service for portable closed-circuit TV System
6. Projector Stand (available electric service)
7. Telephone to Image Initiator Control Station
8. Black-out capability (built in during facility construction)
9. Electric Service for equipment
10. Easel (tripod, map rail, etc.) for display of graphics

Figure 6.6: Components of an Image Initiator Terminal for Distribution Electronically of RAMP Services

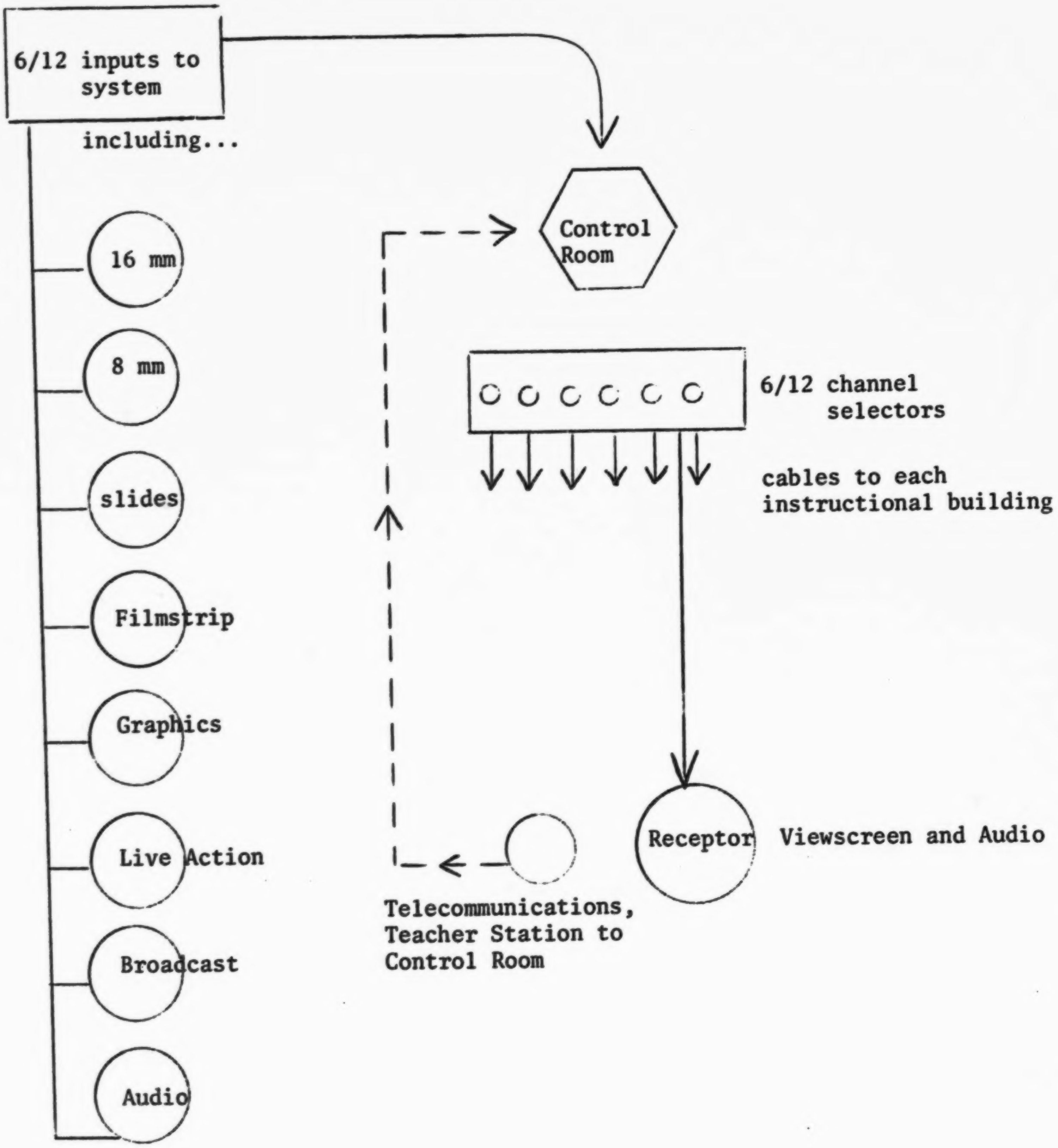
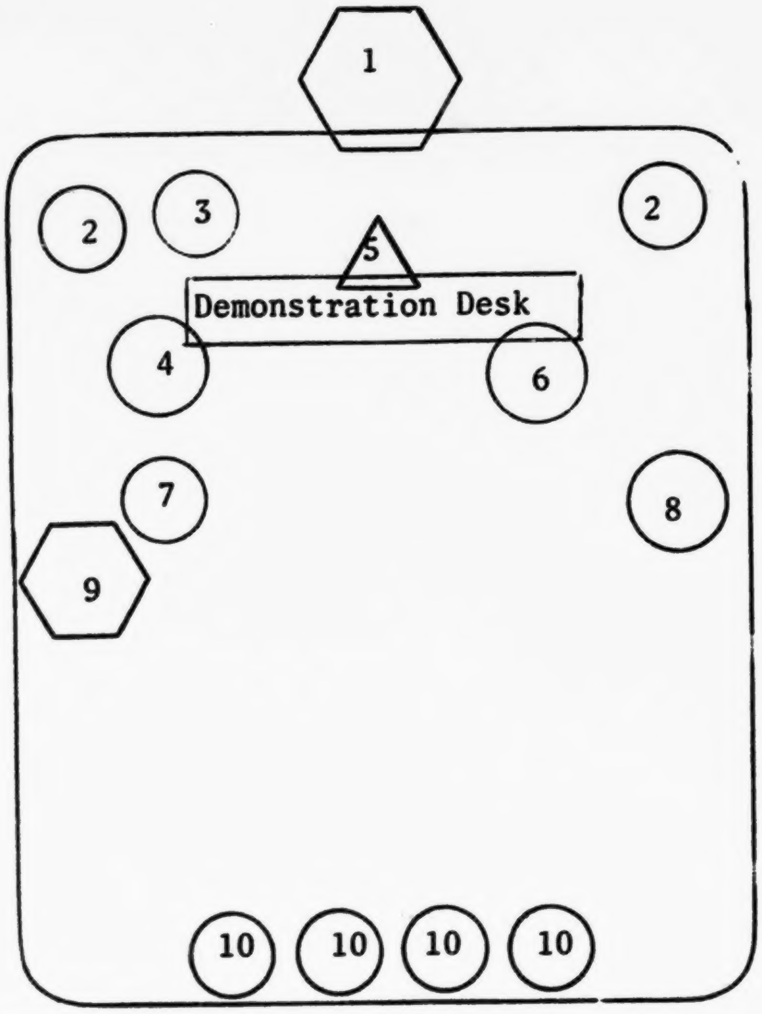


Figure 6.7: Components of a Lecture Theatre Using Multi-Media RAMP Techniques



1. Rear Projection Screen for TV
2. Optical Screen
3. Screen for Overhead Projector
4. Overhead Projector
5. Instructor's Control Terminal
6. TV Camera, Ceiling Mounted

7,8. TV Camera

9. TV Operator
10. Slide Projector
11. Filmstrip Projector (not shown)
12. Movie Projector (not shown)

Estimates of Quantities of Equipment

Table 6.2 is a list of estimated quantities for equipment to be incorporated into the RAMP system. These estimates are based, in part, on recommended American Library Association standards, but have been somewhat drastically revised to fit the special requirements and capabilities of RAMP as projected.

Table 6.1: Space Considerations for RAMP Central for the South Campus of Seattle Community College

Code	Use/Contents	Approximate Room Area (Square Feet)
A	RAMP Director's Office	150
B	Secretary, Cataloger	120
C	RAMP Library (catalog, files of source documents, film library, etc.)	300
D	Print Shop (mimeo, ditto, Xerox, offset, hand press, etc.)	200
E	Model Shop (wood- and metal-working equipment, painting, etc.)	200
F	General Production Area (transparency production, slide mounting, drafting and art, film splicing, etc.)	400
G	Photo Processing Area (copy cameras, etc.)	120
H	Photographic Darkroom (developing, printing, enlarging, etc.)	80
I	TV Director's Office	150
J	TV Studio #1 (12 feet)	300
K	TV Studio #2 (12 feet)	800
L	Visitors' Viewing Room	120
M	Supporting Equipment Room (video tape recorders and players, filmstrip projectors, film chains, test equipment, etc.)	200
N	Control Room (switching gear, channel selectors, telecommunications to receptor stations, controls for studios, etc.)	400
O	Storage, Repair and Distribution Area (shelving for storing RAMP apparatus, for repairing and maintaining it, and dispatching it on schedule to classrooms; includes loading ramp for delivery vans)	320
TOTAL		3,860

Table 6.2: Estimated RAMP Materials and Equipment Needs for the South Campus of Seattle Community College

Quantity	Item	Remarks
1,000	16 mm films, college titles	Plus rentals
2,500	Filmstrips, college titles	Duplicate as needed
2,000	Audio disks and/or tapes	Duplicate as needed
-	Single concept films	As available and as manufactured by RAMP
-	Transparencies	As available and as manufactured by RAMP
1	35 mm sound projector	Auditorium
25	16 mm sound projectors	-
10	8 mm sound projectors	To be increased 25
25	Film loop projectors	-
25	2 inch by 2 inch slide projectors	-
25	Filmstrip projectors	-
10	Filmstrip with sound projectors	-
5	3¼ inch by 4 inch slide projectors	-
120	Overhead projectors	1 per classroom; 1 in certain laboratories, multiples in some classrooms
5	Auditorium-type overhead projectors	1 per lecture theatre
5	Opaque projectors	-
4	Portable closed-circuit TV units	-
4	TV cameras for in-room use	To magnify demonstrations
3	TV cameras for multi-media room	-
1	Rear-screen TV projector	-
50	RAMP TV viewscreens	Capabilities for expansion to 100
10	Audio playback devices	-
20	Audio recorders (magnetic tape)	-
100	Projector carts	-
120	Projection screens	1 per classroom; 1 in certain laboratories; multiples in certain rooms
2	TV studios	Complete with cameras, dollies, microphones, etc.
1	TV control room	Complete with switching, mixing gear, etc.
2	Video recorders	-
1	Telephone communications system	-
1	Drafting table and accessories	-
1	Offset camera	-

Table 6.2 (Continued)

Quantity	Item	Remarks
-	Cameras	-
1	Photo Darkroom	Complete
6	Transparency producers	Various types
1	Model shop	Complete
2	Film splicers and rewind	-
2	Paper cutters	-
1	Letter press	-
1	Mechanical lettering set	-
-	Supplies (film, paper, mounts, inks, etc.)	-
1	Van-type delivery vehicle	-

VII

GENERAL CLASSROOMS FOR COLLEGE PARALLEL AND GENERAL EDUCATION CLASSES

Philosophy and Objectives

Seattle Community College plans to offer traditional undergraduate, lower-division college-level courses for both College Parallel and two-year Adult General Education Programs.[1] Both the college parallel and the two-year adult general education programs consist of courses acceptable for transfer credit at a college or university. The difference between the two programs is the composite of courses taken by the student which is determined by the goals of the student and the requirements imposed by the institution. Acceptability of transfer courses to state colleges and universities serves as a major guideline in course development; although the College Parallel Program probably will not resemble that program at an institution to which most students may transfer.

The courses offered as part of these Programs will not be restricted to any part of the day or night. Courses offered at any time of the day or night, week or year, will receive the same credit.

Classrooms included in this section of the Report are those to be planned for interchangeable use and which require few, if any, special design features. They will serve the basic purpose of providing a teaching facility for those courses in the College Parallel and Adult General Education Programs which do not require laboratory experiences.

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[1] Seattle Community College, *A Recommended Plan for Articulating the Instructional Programs in Seattle's Comprehensive Community College*, Seattle, Washington: Seattle Public Schools, February, 1966.

Curricula and Courses

The course offerings will include:

1. Business Administration.
2. Language Arts, Journalism, and Speech.
3. Pre-engineering.
4. Social Sciences including history, economics, sociology, political science, philosophy, and psychology.
5. Foreign Languages including Russian, French, German and Spanish.
6. Mathematics.

Some Emerging Concepts

Current and emerging developments in educational technology have significant implications for the planning of space for classroom instruction. The changes occurring in both curriculum design and in instruction in the community colleges suggest the design of facilities that can be readily adapted to the use of techniques unforeseen at this time. Changes in classroom procedures and techniques in grouping students and in the use of instructional media are of particular significance.

The basic objective of community college teaching is to cause students to learn. The college staff and its teaching faculty must devise and manipulate learning situations, present appropriate materials, and select and use effective learning media that will contribute to maximum student achievement.

The next thirty years will be years of innovation on the part of community college instruction. Teachers and administrators are pressing for research in the use of educational television and in team teaching in order to handle the growing enrollments and still adhere to tried and accepted principles of learning. To do this, the educational program of the future will evolve in new directions in teaching and organizing for instruction.

Some developing trends are as follows:

1. Different patterns of grouping students for instruction utilizing large groups, small groups, and individualized study. Student learning results from a variety of

experiences and the exposure to many types of activities. Instructional inspiration takes place in small group confrontations while large group confrontations are information gleaning-giving sessions. Small group sessions can be inspirational and motivational; large groups are largely utilitarian.

2. Greater dependence upon students to assume more and more responsibility for learning on an individual basis.
3. Use of programmed materials and programmed learning devices (teaching machines and computers).
4. Access to instructional materials in new ways; for example, the use of closed-circuit educational television systems, information retrieval systems, and computer assisted instruction.

Classroom dimensions and shapes and structural, utility and service systems must permit ready adaptation if the indicated changes are to take place through change in facility design. Space organization and treatment must make possible the foregoing emerging developments in order to avoid early educational obsolescence.

Space Considerations and Facility Requirements

General

Table 7.1 contains a list of the number and type of classrooms required for approximately 3,000 college transfer and general education students.

Table 7.1: Space Requirements for General Classrooms for College Parallel and Adult General Education Classes for the South Campus of Seattle Community College

Type	Number	Unit Size	Approximate Space
Seminar Rooms	6	400	2,400
Divisible Classrooms[a]	2	800	1,600
Regular Classrooms	12	720	8,640
Large Classrooms	3	1,000	3,000
Lecture Room	1	1,600	1,600
TOTAL	24		17,240

[a] These rooms should each be divisible by a folding door.

The following requirements are applicable to all spaces:

1. All classrooms should be capable of darkening for visual presentations.
2. Adequate ventilation should also be provided for the conditions created when the room is darkened.
3. Instructional storage space should be accessible to the classroom areas (not necessarily adjacent).
4. Each room should have provision for the use of RAMP media (see descriptions of RAMP central). Educational television reception (closed circuit and broadcast) should be possible through the installation of conduit and a potential TV set connection.
5. Adequate light and sound control should be provided.
6. Cabinets or bookcases provided for classroom storage should be movable, not built in.
7. Room control of heating and ventilation is desirable.
8. Visual screens should be provided in all classrooms, and locations should permit good sight lines from all parts of room.
9. A minimum of 6 feet of movable bulletin board space should be provided.
10. Each classroom should have a pencil sharpener.
11. Map rails and hangers should be installed above each chalk board.
12. Electrical outlets should be located on the lower wall of the classroom and spaced on 10-foot centers (approximately) around the room.
13. Color should be used to create variety among the classrooms.
14. Eight rooms should be planned for mathematics as well as interchangeable use. These rooms should also include:
    a. Three walls of chalk boards with 12 to 16 lineal feet on each wall.
    b. A lined section of chalk board for polar and linear graphs on a 4-foot section of chalk board near the front of the room.

Seminar Rooms

It is suggested that six of these rooms be provided. Each space should be planned to accommodate 16 to 20 students. These rooms are to be used primarily as small group instruction rooms. Generally, the activities in this room will include seminar-type discussions among students and between faculty and students, observing demonstrations, viewing overhead projections and non-projected visual materials, and listening to audio tapes and recordings and amplified telephonic conversations.

These rooms should be well lighted and informal in atmosphere to enhance the involvement of students and encourage student-faculty and student-student interaction. The vitality and excitement of living and learning in our modern society should be reflected here. The use of appropriate colors, lighting and informal furnishings should enhance the creation of this atmosphere.

The following furnishings and equipment are needed for each of these rooms:

1. Pull-down projection screen.
2. Carpet recommended as acoustical treatment and floor covering.
3. Full-closure venetian blinds or other light control on windows, if provided.
4. Tables and appropriate chairs for 16 students.
5. Standard office bookcase.
6. Movable coat/umbrella storage racks.

Divisible Classrooms

Two of these classrooms should be provided. Each should have the capability of being divided into two spaces by folding doors, each providing a reasonable degree of sound isolation (35 to 40 decibel loss). Movable tables and chairs provided for these rooms should be adaptable to arrangements for seminar type groups, small class groups, and groups of 30 to 40.

The following furnishings and equipment should be provided:

1. Pull-down projection screen in each divided space.
2. Carpeting as acoustical treatment and floor covering.
3. Full-closure venetian blinds or other suitable light control on windows, if provided.
4. Tables and appropriate chairs for 20 students in each space--preferably seated at four-place student tables.
5. Twelve feet of movable chalk board in each divided space.

Regular Classrooms

Twelve of these rooms should be provided. These rooms will be used interchangeably for such student activities as listening to lectures, note taking, listening to audio tapes and recordings, viewing both projected and non-projected materials, viewing educational television, and participating in group discussion.

These rooms are likely to become obsolete in size, and a change in space organization may be required at some future date; therefore, combinations of rooms and their design features should anticipate this possibility.

Furnishings and equipment in these rooms should include:

1. Pull-down projection screen.
2. Carpeting as acoustical treatment and floor covering.
3. Full-closure venetian blinds or other suitable light control on windows, if provided.
4. Tablet arm chairs for 35 students.
5. Twelve feet of movable chalk board.
6. Movable bookcase and storage cabinet (not built in).

Large Lecture Classrooms

Three of these rooms should be provided. These rooms will be used interchangeably for such student activities as listening to lectures, note taking, listening to audio tapes and recordings, and viewing projected materials and educational television.

Furnishings and equipment should include:

1. Multiple screen potential with connections to RAMP.
2. Carpeting as acoustical treatment and floor covering.
3. Tiered seating with sight lines based on projected visual materials as a point of focus.
4. A small raised platform at front of the room.
5. Sound system potential with jacks for speakers and microphones.
6. Three sections of chalk board--4 feet per section.
7. A storage room behind the platform.
8. A capacity for 60 to 75 seats is desirable.

Lecture Room

One of these rooms should be provided. Its planning should be similar to the large lecture classrooms except that it should have maximum potential for RAMP facilities and should seat approximately 120 to 130 students.

Facility Relationships

Table 7.2 indicates the approximate distribution of classrooms by potential use among the subject matter fields in the College Parallel and Adult General Education Programs. This table should provide some guidance as to general relationships to other facilities.

Table 7.2: Distribution of Classrooms by Subject Matter Fields in College Parallel and Adult General Education Programs for the South Campus of Seattle Community College

Subject Field	Student Credit Hours	Room Needs
English and Journalism	7,050	5
Foreign Language	2,402	2
Mathematics	4,153	4
Social Sciences	10,984	10
Business Administration	1,969	2
Physical Education and Health	8,000	1
TOTAL		24

The general classrooms do not necessarily need to be in close proximity to each other. These spaces may be scattered in among other more specialized facilities. Faculty offices for individuals teaching in these general areas may be placed among these classrooms. Ready access to the Instructional Resources Center should be a major consideration.

CHAPTER VIII

OCCUPATIONAL ALLIED SUPPORTING FACILITIES

Philosophy and Objectives

Allied supporting courses are those in a curricular program which directly support or reinforce courses included in an occupational or technical speciality.[1] Such courses may include both service and general education courses adapted for occupational education students. Service courses are required in semi-professional, technical and vocational education curriculums and are intended to familiarize students with materials and processes commonly used in the various occupations. Examples of service courses include industrial safety, bench practices, and fundamental machine tool operations.

Likewise, occupational students will enroll in a certain number of specific general education and supporting courses allied to their field of study. These courses are intended to complement and to be a part of occupational curriculums. They are planned to aid the student in attaining an optimum degree of self-development and to assist him in developing functional competence as a citizen in a democratic society. Examples of such courses include applied mathematics, applied science, drafting, communication skills, economics, public speaking, and human relations.

Description of Functions and Services to be Housed

Functions of the allied supporting facilities included herein fall into two basic categories:

1. Instructional Supporting Space--These are instructional spaces which consist primarily of classrooms, lecture rooms, and small discussion (seminar type) rooms. Generally

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[1] Seattle Community College, *A Recommended Plan for Articulating the Instructional Programs in Seattle's Comprehensive Community College*, Seattle, Washington: Seattle Public Schools, February, 1966.

speaking, these rooms are non-specialized in nature, require no specialized built-in equipment, and are usable on a shared basis by all occupational clusters.

2. Auxiliary Supporting Space--These are auxiliary or supporting spaces consisting of faculty offices, lounges, workrooms, division offices, and similar spaces; although non-instructional in character, they do provide support to the occupational curriculums.

The spaces described here are the instructional supporting spaces which do not require specialized built-in equipment. The non-instructional spaces such as office, storage, etc., are described in the faculty office and other sections of this Report. Those allied supporting spaces requiring special built-in equipment such as science laboratories are described in the specialized laboratory sections of this Report.

Instructional Supporting Facilities

Classrooms to serve the allied supporting requirements of occupational students were estimated by using the following rationale:

1. It was assumed that degree students would spend one-third (1/3) of their time in laboratory instruction and two-thirds (2/3) of their time in allied supporting or general education.
2. The assumption for diploma students was that one-half (1/2) of their time would be spent in laboratory experience and one-half (1/2) of their time in general or allied education.
3. For certificate curriculums, students would spend two-thirds (2/3) of their time in laboratory experience and one-third (1/3) of their time in general and allied education.

Table 8.1 shows the computed number of student contact hours per day in laboratory experience and in allied supporting courses based on the assumptions outlined in the previous paragraph. Assuming that these rooms would be available for use nine hours per day and that room period utilization would approximate eighty-five percent (85%), a total of twenty-five (25) classrooms of varying sizes will be needed.

In addition to the classrooms, there is a need for one or more large group teaching spaces (teaching auditoriums) for the support of the occupational curriculums. These spaces would be used for large audience lectures, both scheduled and non-scheduled. These spaces would also provide accommodations for periodic conferences, workshops, short courses, large group meetings, etc., which would be sponsored by, or connected with, the activities of the various occupational clusters.

Table 8.1: Estimated Hours Per Day in Specialized Facilities, Non-Specialized Facilities, and Total Hours in All Facilities for the South Campus of Seattle Community College

Cluster	Specialized Facilities	Non-Specialized Facilities	All Facilities
II Food	440	340	780
III Business Management/ Finance/Accounting/ Data Processing	540	1,080	1,620
IV Marketing and Distribution	675	1,125	1,800
V Office Occupations and Secretarial Science	430	890	1,320
IX Technical (all)	660	1,320	1,980
X Electrical	450	600	1,050
XI Aeronautical	750	750	1,500
XII Metal Fabrication	600	600	1,200
XIV Automotive	700	800	1,500
TOTAL	5,245	7,505	12,750

Summary of Space Needed

Table 8.2 is a list of the recommended occupational allied supporting facilities including those described elsewhere in this Report.

Table 8.2: Total Requirements for Supporting Facilities, Instructional and Auxiliary, for the South Campus of Seattle Community College

Type of Space	Units	Net Space
Classrooms, Seminars, etc.	25	10,850
Teaching Auditoriums	(a)	(a)
Division Offices	(a)	(a)
Division Reception	(a)	(a)
Faculty Offices	(a)	(a)
Evening Faculty Offices	(a)	(a)
Workrooms	(a)	(a)
Instructional Storage	(a)	(a)
Faculty Lounges	(a)	(a)
Science Laboratories	(a)	(a)
Drafting Rooms	(a)	(a)
Art Rooms	(a)	(a)
Oral and Written Communications	(a)	(a)
TOTAL	25	10,850

[a] Requirements are included elsewhere in this Report.

Some Emerging Concepts

Emerging developments in classroom instruction must be understood if classroom design is to permit today's program and encourage the emerging one. Some developing trends include the following:

1. Different patterns of grouping students for instruction utilizing group sizes ranging from 1 to 10, 10 to 12, 20 to 25, 40 to 60, 100 to 150, and larger.
2. Greater dependence upon students to assume more and more responsibility for learning on an individual basis.
3. Use of programmed materials and programmed learning devices (teaching machines).
4. Access to instruction materials in new ways; for example, the use of closed-circuit educational television systems, information retrieval systems, and computer-assisted instruction.

Classroom dimensions, shapes, structural utility and service systems must allow ready adaption if the indicated changes are to be allowed in the facility design. Space organization and treatment must allow for and make possible these emerging developments in order to avoid early educational obsolescence.

Individual Space Considerations

Educational requirements for the following types of spaces follow:

1. Seminar rooms
2. Confrontorium
3. General classrooms

Seminar Rooms

It is recommended that six of these spaces be provided. Each space will require 280 square feet of assignable area and should be designed to accommodate 16 students.

These spaces are intended to be used primarily for group-mode activities of a discussional nature in support of the occupational instruction program. During periods of peak usage of other campus facilities, they may also be available for a variety of other purposes, as is typically the case with general-use facilities. Among these would be such activities as informal discussion groups, faculty planning groups, and independent and group study on project activities.

Nature of Activities to be Housed

Typical student activities will include listening to discussion, observing demonstrations, viewing overhead projections, note taking, listening to sound track audio media, viewing non-projected visual materials, buzz-session activities, listening to amplified telephonic conversations, and spread out use of materials.

Typical professional activities will include preparation, supervision, participation, involvement and control of all activities previously mentioned.

Equipment and Furniture--
Built-in

1. Pull down projection screen.
2. Standard wall treatment decorated to reflect occupational area of prime user.
3. Carpet highly recommended.
4. Standard ceiling treatment.
5. Room lighting should be designed and equipped for dimming.
6. Standard window treatment with dark out capability for visual projection use.
7. Standard door treatment.
8. Convenience outlets along walls on 10-foot centers.
9. Coaxial conduit or conduit chase for educational TV capability. (See explanation of RAMP requirements elsewhere in this Report.)
10. Air-conditioning strongly recommended.
11. Tack board--4 lineal feet.
12. Chalk board equipped with map rails--8 lineal feet.

Furniture and Equipment--
Movable

1. Movable coat/umbrella rack
2. Large seminar table to seat 16 persons
3. 16 comfortable upholstered armchairs
4. Standard office bookcase
5. Five-drawer legal metal file cabinet

Design Relationship and
Primary User

Number of Spaces	Primary User
1	Marketing and Distribution
1	Civil Engineering Technology
3	Industrial Engineering Technology
1	Mechanical Engineering Technology
6 Total	

Additional Considerations

The seminar room should be designed, constructed and decorated in such a manner as to present an atmosphere of excitement, a feeling of comfort, and an area which elicits and encourages the highest level of professional and student involvement in the activities housed. The general decor should be planned not only to reflect the activities of the prime user, (i.e., Mechanical Engineering) but should also reflect the vitality and excitement of learning, working and living in our modern society.

Confrontorium

It is recommended that one of these spaces be provided. This space will require 850 square feet of assignable area and should be designed for use by 40 students. These spaces are intended to be used primarily for group confrontation activities of a debate-type or court of law nature in support of the occupational instructional program. Although this type of space would best be designed for the teaching of a course such as Business Law, it would also be quite suitable for large group seminars and discussion meetings.

Nature of Activities to be Housed

Typical student activities will include listening to and taking part in discussions and debates, observing demonstrations, note taking, listening to sound track audio media, viewing non-projected visual materials, listening to amplified telephonic conversations and lectures, and viewing projected media.

Typical professional activities will include preparation, supervision, participation, involvement and control of all activities previously mentioned.

Equipment and Furniture--Built-in

1. Pull down projection screen.
2. Standard wall treatment decorated to reflect serious implications of law and legal debate.
3. Tiered seating, two rows ("U", "V" or "horseshoe" shape).
4. Electrical service to instructor's station in mid room.
5. Continuous desk surfaces for 40 students.
6. Carpet highly recommended.
7. Standard ceiling treatment.
8. Room lighting should be designed and equipped for dimming.
9. No windows recommended.
10. Standard door treatment.
11. Convenience outlets along walls on 10-foot centers.

12. Coaxial conduit or conduit chase for educational TV capability. (See explanation of RAMP requirements.)

13. Air-conditioning strongly recommended.

Equipment and Furniture--
Movable

1. 40 student chairs
2. 1 instructor's chair
3. 1 small instructor's table
4. Portable chalk board
5. Standard office bookcase

Design Relationship and
Primary User

Number of Spaces	Primary User
1	Business Management/Finance/Accounting

General Classrooms
(20 Student Stations)

It is recommended that 8 of these spaces be provided. Each space will require 350 square feet of assignable area and should be designed to accommodate 20 students.

These spaces are intended to be used primarily for group-mode activities of a lecture nature in support of the occupational instruction program. During periods of peak usage of other campus facilities, they may also be available for a variety of other purposes, as is typically the case with general-use facilities. Among these would be such activities as informal discussion groups, occupation-related student club meetings, faculty planning groups, etc.

Nature of Activities
to be Housed

Typical student activities will include listening to lectures or discussions, note taking, observing demonstrations, viewing overhead or other projections, listening to sound track audio media, viewing non-projected visual materials, buzz-session activities, and spread out use of materials.

Typical professional activities will include preparation, supervision, participation, involvement and control of all activities previously mentioned.

Equipment and Furniture--Built-in

1. Pull down projection screen.
2. Standard wall treatment.[2]
3. Carpet recommended.[2]
4. Standard ceiling treatment.
5. Standard window treatment with dark out capability for visual projection.
6. Standard door treatment.
7. Convenience outlets along walls on 10-foot centers.
8. Coaxial conduit or conduit chase for educational TV capability. (See explanation of RAMP requirements elsewhere in this Report.)
9. Air-conditioning recommended.
10. Tack board--4 lineal feet.
11. Chalk board equipped with map rails--16 lineal feet.
12. Permanent coat rack on wall.

Equipment and Furniture--Movable

1. 20 tablet armchairs[2]
2. 1 instructor's chair
3. 1 small instructor's table

Design Relationship and Primary User

Number of Spaces	Primary User (Including equipment and furniture exceptions)
3	Aeronautical a. Scrub down type wainscoting on walls recommended. b. Standard tile floor treatment. c. 5 each four-student tables with student chairs recommended in lieu of tablet armchairs.
2	Metal Fabrication a. Scrub down type wainscoting on walls recommended.

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[2] See exceptions under *Design Relationship and Primary User* which follows.

b. Standard tile floor treatment.

c. 5 each four-student tables with student chairs recommended in lieu of tablet armchairs.

3 Automotive

a. Scrub down type wainscoting on walls recommended.

b. Standard tile floor treatment.

c. 5 each four-student tables with student chairs recommended.

Data Processing Classroom
(25 Student Stations)

It is recommended that one of these spaces be provided. This space will require 420 square feet of assignable area and should be designed to accommodate 25 students.

This space is intended to be used primarily for group-mode activities of a lecture or demonstration nature in conjunction with the activities of the data processing laboratory and the instructional program in data processing. During periods of peak usage of other campus facilities, this may also be available for a variety of other purposes as is typically the case with general-use facilities.

Nature of Activities
to be Housed

Typical student activities will include listening to lectures or discussions, note taking, observing demonstrations of computer operations, etc.

Typical professional activities will include preparation, supervision, participation, involvement and control of all activities previously mentioned.

Equipment and Fuurniture--
Built-in

1. Standard wall treatment (3 walls).
2. Wall between this space and computer machine room to be glass. This wall should be the front wall of this space.
3. Carpet recommended.
4. No windows recommended.
5. Standard door treatment.

6. Convenience outlets along walls on 10-foot centers.
7. Coaxial conduit or conduit chase for educational TV capability. (See explanation of RAMP requirements elsewhere in this Report.)
8. Air-conditioning strongly recommended.
9. Tack board--4 lineal feet.
10. Chalk board equipped with map rails--16 lineal feet (along side wall).
11. Permanent coat rack on wall.

Equipment and Furniture--
Movable

1. 25 tablet armchairs
2. 1 instructor's chair
3. 1 small instructor's table
4. Draw drapes to cover glass wall

Primary user will be data processing, and the space should be located adjacent to that area.

General Classrooms
(35 Student Stations)

It is recommended that 8 of these spaces be provided. Each space will require 560 square feet of assignable area and should be designed to accommodate 35 students.

These spaces are intended to be used primarily for group-mode activities of a lecture nature in support of the occupational instruction program. During periods of peak usage of other campus facilities, they may also be used for a variety of other purposes as is typically the case with general-use facilities. Among these would be such activities as informal discussion groups, occupation-related student club meetings, faculty planning groups, etc.

Nature of Activities
to be Housed

Typical student activities will include listening to lectures or discussions, note taking, observing demonstrations, viewing overhead or other projections, listening to sound track audio media, and viewing non-projected visual materials.

Typical professional activities will include preparation, supervision, participation, involvement and control of all activities previously mentioned.

Equipment and Furniture--
Built-in

1. Pull down projection screen.
2. Standard wall treatment.
3. Carpet recommended.
4. Standard ceiling treatment.
5. Standard window treatment with dark out capability for visual projections.
6. Standard door treatment.
7. Convenience outlets along walls on 10-foot centers.
8. Coaxial conduit or conduit chase for educational TV capability. (See explanation of RAMP requirements elsewhere in this Report.)
9. Air-conditioning recommended.
10. Tack board--4 lineal feet.
11. Chalk board equipped with map rails--16 lineal feet.
12. Permanent coat rack on wall.

Equipment and Furniture--
Movable

1. 35 tablet armchairs
2. 1 instructor's chair
3. 1 small instructor's table

Design Relationship and
Primary User

Number of Spaces	Primary User
1	Food Services
2	Civil Engineering Technology
1	Industrial Engineering Technology
1	Mechanical Engineering Technology
2	Business Management/Finance/Accounting
1	Office Occupations and Secretarial Science
8 Total	

General Classrooms
(40 Student Stations)

It is recommended that one of these spaces be provided. This space will require 620 square feet of assignable area and should be designed to accommodate 40 students.

This space is intended to be used primarily for group-mode activities of a lecture nature in support of the occupational instruction program. During periods of peak usage of other campus facilities, it may also be available for a variety of other purposes as is typically the case with general-use facilities. Among these would be such activities as informal discussion groups, occupation-related student club meetings, faculty planning groups, etc.

Nature of Activities to be Housed

Typical student activities will include listening to lectures or discussions, note taking, observing demonstrations, viewing non-projected visual materials, buzz-session activities, and spread out use of materials.

Typical professional activities will include preparation, supervision, participation, involvement and control of all activities previously mentioned.

Equipment and Furniture--Built-in

1. Pull down projection screen.
2. Standard wall treatment.
3. Carpet recommended.
4. Standard ceiling treatment.
5. Standard window treatment with dark out capability for visual projections.
6. Standard door treatment.
7. Convenience outlets along walls on 10-foot centers.
8. Coaxial conduit or conduit chase for educational TV capability. (See explanation of RAMP requirements elsewhere in this Report.)
9. Air-conditioning recommended.
10. Tack board--4 lineal feet.
11. Chalk board equipped with map rails--16 lineal feet.
12. Permanent coat rack on wall.

Equipment and Furniture--Movable

1. 40 tablet armchairs
2. 1 instructor's chair
3. 1 small instructor's table

Primary user is Metal Fabrication. One space is needed for this use and it should be located in the vicinity of the metal fabrications facilities.

CHAPTER IX

ADULT GENERAL EDUCATION FACILITIES

Philosophy and Objectives

The College has two basic commitments regarding adult education. One of these is that as a community-oriented institution, the College has the responsibility to provide programs for adult members of the community who either do not meet the prerequisites for, or are not interested in, associate degree and special occupational programs. The other is that youths and adults desiring to pursue a program with prerequisites but have deficiencies that impair their chances of succeeding in such a program should be given an opportunity to reduce these deficiencies.

These two basic commitments make it logical to place the adult general education program already in existence, along with other proposed programs, into a division of Adult General Education.

Meeting these commitments entails educational experiences from basic literacy level to those which constitute a challenge to college graduates. Further, those served will range in age from 16 to 65 or older, and in education from bare literacy to college graduation.

The Curriculum

Five aspects of education encompassed by this program are: (1) the basic adult education (elementary school level) curriculum, (2) the adult high school curriculum, (3) the pre-college curriculum, (4) the courses in English as a second language, and (5) community services. Offerings for the first two of these curriculums would include more than the typical academic subjects. Students enrolled in these programs should be offered experiences in the creative and performing arts, the applied fields of industrial arts, business and homemaking, and physical education.

In the pre-college curriculum, course offerings should be determined on the basis of student needs. Therefore, aspects of the curriculum will be conducted on an individual student basis; however, when possible, students should be served in groups.

The Community Services Program of the College will make continuing demands on its facilities. The Program will consist of a variety of activities such as short courses, seminars, lectures, musicals and courses in family life education and in the use of leisure time. The needs to be fulfilled by this program are as broad and as varied as the community the College serves. Also, as the needs of the community change, the Community Services Program facilities such as the auditorium, the Instructional Resources Center, lecture rooms, specialized laboratories (i.e., music and art), and many classrooms will be used.

Teaching and Learning Activities

The first three aspects of this program will enroll many students who may have experienced either educational failure or the lack of educational opportunity. Imaginative teaching is required to motivate such individuals and to help them achieve success. This calls for variety in instructional method, including the use of all types of audio and visual aids, demonstrations, explanations, practice, and the frequent feedback on progress.

In general, those enrolling in the Adult General Education Program will be well motivated and mature in outlook. They will expect their instructors to treat them as adults and to make their attendance personally satisfying. It is important, therefore, that methods be selected for their appropriateness to the content of each course. It should also be noted that motivation to some of those enrolling is transitory and for these students, "dropout" is a potential problem.

Student Groups

Class sizes for many aspects of this program need to be kept small. This is necessary for both the individual assistance that is needed for the learning activities and to afford those enrolled a measure of security and identity. This calls for classes which range in size from 10 to 25.

There are exceptions to small classes, however. Some classes may range up to 100 and occasionally larger, particularly in courses that are taught by the lecture method.

It is recognized that an emerging trend in the grouping of students is the large group, small group, individual study concept developed in the chapter on classrooms in this Report. This concept also applies here.

Number and Types of Spaces Needed

The space in Table 9.1 represents but a small portion of that which will be needed for the Adult General Education Program. There are several reasons for this. First, extensive use will be made of facilities planned for other programs of the College. Second, in other chapters of this Report, specialized facilities are described for the art, music, science and occupational offerings which are needed for students in the Adult General Education Program. Finally, it is anticipated that the Basic Adult Education Program may be equally effective in reaching its potential clientele if classes are held in the local neighborhoods where these individuals reside.

While the Adult General Education Program will enroll many of its students in the evening hours, it should by no means be thought of as an "evening program". If the College's commitment to serving all aspects of the adult population of the city is to be realized, some aspects of this program will need to be offered during the daytime hours; consequently, there will be occasions when this program will need to be given priority on the use of instructional facilities during the day.

It can be expected that a substantial proportion of students enrolled in, or desiring to pursue, degree programs will have deficiencies which necessitate their being assigned to the Pre-College Program. However, when such work is taken in class groups, no additional facilities are required, since students will not be occupying facilities for college-level courses during the time they are assigned to the Pre-College Program.

Table 9.1 shows the space characteristics of facilities needed for the Adult General Education Program in addition to the facilities to be used by this program which are included in other chapters of this Report. The table also shows the multiple use which will be made of these facilities and how the Adult General Education Program will draw upon other facilities of the College.

Table 9.1: Summary of the Adult General Education Space Requirements for the South Campus of Seattle Community College

Space Description	Number of Units	Approximate Total Space (Square Feet)
General Classrooms	4	2,880
Seminar Rooms	2	800
Faculty Workroom	1	600
Student Lounge and Study Room	1	(a)
Communications Laboratory (Language)	1	800
Reading-Writing Laboratory	1	800
Departmental Office	1	(a)
Faculty Offices	10	(a)
Toilet Area	-	-
Science Laboratory	1	(a)
Arts & Crafts Rooms	-	(a)
Music Facilities	-	(a)
Shop Facilities	-	(a)
Special Business Education Facilities	-	(a)
Physical Education	-	(a)
Homemaking	-	(a)
TOTAL		5,880

(a) Requirements are included elsewhere in this Report.

Space Descriptions and General Facility Requirements

General Classrooms and Seminar Rooms

These rooms should be equipped as follows:

1. Movable tables and chairs
2. 2 walls of chalk board
3. 8 to 10 linear feet of bulletin board
4. Built-in audio amplifiers
5. Connections for audio-visual and TV equipment
6. Permanently installed audio-visual screen
7. Dim-out window curtains or screens
8. 1 wall of cabinets and bookshelves

Faculty Workroom

This is very much needed for the considerable number of part-time evening faculty who can be expected. It is not practical to assign these instructors an office. To require them to share an office with the regular faculty is not satisfactory. Yet, they need an area for making last minute preparations for class, storing their outer garments, storing supplies, leaving demonstration materials, etc.

This room should be equipped with individual faculty wall cabinets which can be locked, compact desks, chairs, good overhead lighting, and a magazine shelf and bookcase for professional literature.

This space is included as a part of the material on faculty offices reported in Chapter III.

Student Lounge Area

This facility is very much needed by those enrolled in the Basic Adult Education Program and those in the Adult High School Program. It serves as a place for them to study, to leave personal belongings, and a place where they can feel at home. Many of this group, because of their age and dress, feel out of place with regular college students. This space could be located in the College Community Center if it is in close proximity to where these adult students have their classes.

The space should be equipped with lounge chairs, table lamps, individual work desks, ample shelf space for books, and hanger space for coats. The floor should be of material which does not stain and is easy to clean. Mechanical ventilation should be provided to draw off cigarette smoke. Restrooms should be located nearby. Care should be taken to construct the facility so that sound is adequately controlled. This space is incorporated into the requirements for the College Community Center and is not a separate space.

Specialized Laboratories (Pre-College)

Many students who attend the College will lack the academic prerequisites for the College Parallel and the Occupational Programs, and many will be deficient in one of the basic academic skills. The basic purpose of the Pre-College Program is to assist underdeveloped students in realizing their fullest educational potential. In the curriculum supporting this new program, there will be emphasis on the communicative skills with specific attention given to the development of reading skills and to language improvement. Also, attention will be given to the development of computational skills.

The objectives of the curriculum are: (1) to provide guidance services to help students assess their individual strengths, weaknesses and interests; (2) to aid the student in the development of realistic educational goals; and (3) to help the student acquire the basic skills which will allow him to achieve realistic educational and vocational objectives.

Facilities for the Pre-College Program should aid in the implementation of its basic objectives. In addition to general classrooms and lecture rooms, specialized facilities including a language laboratory, a reading-writing laboratory, and an individual study space should be provided. These specialized facilities should be planned as a functional part of the Instructional Resources Center for maximum utilization. An all-purpose science laboratory has been planned in conjunction with the science facilities for the entire College.

Reading-Writing Laboratory

This room should contain approximately 700 to 800 square feet and should accommodate 20 to 24 students at tables arranged for a seminar-type use. Ten individual carrels or cubicles should be provided to allow the use of reading accelerators. These carrels should be located either within the laboratory or in a small room adjoining and opening into the laboratory. Cupboard storage should be provided for large tachistoscopes and controlled reading devices. Open book shelving should also be provided. Approximately 16 lineal feet of chalk board with map rail and hooks and a pull-down audio-visual screen are needed. Approximately 12 linear feet of tack board are also needed. Light control should provide for dim-out conditions. A small storage space of approximately 100 square feet should be planned as a part of this facility.

Language Laboratory

This room should provide individual listening and recording carrels for 24 to 30 students and should contain approximately 800 square feet of space. A raised platform should be provided at the front of the room to allow the instructor full view of the student stations. A master console should be provided with several channels for instructor-student communication. A chalk board, approximately 16 feet in length, should be installed at the proper height on the wall behind the console so that it can be seen by each student in the laboratory. A master electric switch should be provided to control the electrical output to the console and to the student booths or carrels. A pull-down audio-visual screen should be installed for projecting visual aids and should be easily viewed by seated students. Adequate shelving should be provided for students to temporarily shelve books and materials not needed for use in the language laboratory. Light control should provide for dim-out conditions. A small storage room adjoining the laboratory is needed for storing tapes, small items of equipment, and instructional aids and materials.

Individual Study Facilities

Facilities are needed to provide opportunities for Pre-College students to work on an individualized study basis. If individual study carrels are provided in the Instructional Resources Center, some of these should be equipped for reading, listening, viewing film clips, etc. Likewise, access to both the language laboratory and the reading-writing laboratory should be possible at times other than regularly scheduled class periods for individual study purposes.

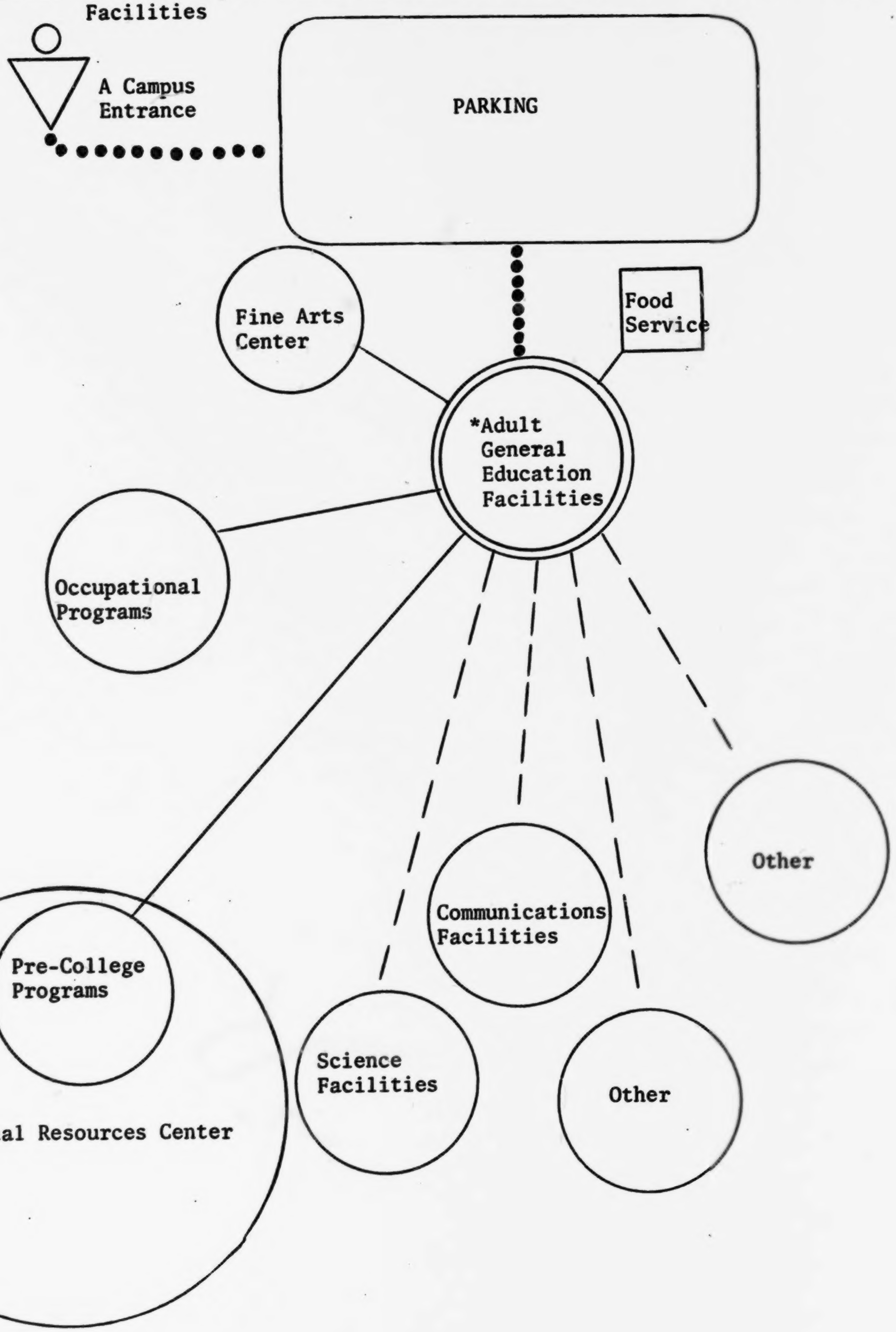
An individual study laboratory per se is not proposed for this program. However, individual study facilities should be made available to the students in this program as described.

Space Relationships

Figure 9.1 shows the functional relationships of the Adult General Education facilities to other facilities on the campus which will be utilized by these programs. The following comments are offered in the way of explanation and elaboration:

1. It is important that instructional facilities for the Basic Adult Education Program, and to the extent possible, those for the Adult High School Program be located near a campus entrance and parking area. Adequate parking is needed at this location (approximately 350 cars) for these students.
2. Those enrolled in the Adult High School Program will take courses which require the use of specialized facilities, developed primarily for other programs. Obviously, it is not possible to have all such facilities located in close proximity to where their basic courses are taken. However, to the extent possible, these Adult General Education facilities should be in reasonably close proximity to: (a) the Instructional Resources Center, (b) the science laboratories, (c) the Fine Arts Center, and (d) the secretarial science and shop facilities.
3. A considerable number of those who participate in the evening programs come directly from their place of employment to the campus. It is important that there be a food service facility available to them within a reasonable distance of where their classes are held. The College Community Center is the logical place to provide this service.

Figure 9.1: Relationship of Adult General Education Facilities to Other Campus Facilities



*The facilities specifically planned for this program. See Table 9.1.

CHAPTER X

FACILITIES FOR PHYSICAL EDUCATION

Philosophy and Objectives

The Physical Education Program has two major objectives. One is to develop interests and competencies on the part of the college student which will result in life-long physical activity. The second is to develop and maintain good body conditioning and health on the part of the college student.

To promote the first objective, whenever possible the Program should be conducted on a coeducational basis and should include students from all programs of the College including those in the Adult General Education and Occupational Programs. Also, if the first objective is to be attained, it is essential that the Program be organized and operated so that student participation will be voluntary. Every effort must be exercised to avoid developing negative attitudes toward participation in physical activity. Another means of attaining this objective is to locate the physical education facilities in easy access to where students congregate rather than in a remote section of the campus.

The College administration has taken the position that each campus of the Seattle Community College will develop its own curriculum and that the intercollegiate sports program should emerge progressively on each campus as it is developed. Consequently, the space and facilities proposed here are those needed for a good instructional and intramural physical education curriculum. These facilities should make possible the subsequent development of an intercollegiate athletic program, although additional facilities may have to be developed to provide space for a comprehensive intercollegiate program.

The Curriculum

Attaining the objectives of the Program calls for a wide range of activities. Also, by virtue of climatic conditions, the

Program is rather heavily oriented toward indoor activities. The following list includes anticipated activities which can be offered by means of regularly scheduled classes, the extra-curricular program, unorganized activities, and the intercollegiate sports program.

Group I: Individual Competitive Activities

1. Archery
2. Badminton
3. Bowling
4. Fencing
5. Golf
6. Hardball
7. Horseshoes
8. Paddleball
9. Squash
10. Table Tennis
11. Tennis
12. Track

Group II: Aquatics

1. Boating
2. Diving
3. Rowing
4. Sailing
5. Swimming
6. Water Skiing

Group III: Body Development and Conditioning

1. Calisthenics
2. Dance Forms
3. Gymnastics
4. Tumbling
5. Weight Lifting
6. Wrestling

Group IV: Outdoor Recreation

1. Camping
2. Hiking
3. Ice Skating
4. Snow Skiing
5. Mountain Climbing

Group V: Team Sports

1. Baseball
2. Basketball
3. Football
4. Soccer
5. Softball
6. Volleyball

Group VI: Health and Safety

1. Corrective and Remedial Activities
2. First-Aid
3. Health Concepts
4. Lifesaving
5. Rescue Procedures

Teaching and Learning Activities

Teacher activities will emphasize explanation, demonstration and supervision. Substantial use will be made of audio-visual aids and, in certain activities, substantial time will be devoted to lecture and discussion.

Student involvement will, quite understandably, focus on participation in physical activity. However, they will also observe demonstrations, view audio-visual aids, participate in discussions, listen to explanations and lectures, and prepare reports and notebooks.

Student Groups

The majority of instruction groups will range from approximately 20 to 35 students. Occasionally it will be desirable to teach groups ranging up to 100 in a class. However, such large-sized groups will usually be organized for the purpose of bringing several classes together for a class period, or a portion thereof, to listen to a lecture, view an audio-visual presentation, observe a demonstration, or participate in calisthenics. Groups of less than 20 may be required for activities such as handball, squash, diving and water skiing.

Number and Types of Spaces Needed

Tables 10.1 and 10.2 show the number, type and approximate space needed for the Physical Education Program. The tables show separately the campus indoor and outdoor space needs with square footage requirements for the indoor space only.

It is also anticipated that the College will utilize both indoor and outdoor facilities which exist elsewhere in the community. Facilities for this type of activity will be those needed for golf, bowling, outdoor water activities, and outdoor recreational activities. It appears impractical for the College to construct and operate such facilities at the present time. In each instance there exists facilities nearby which the College can use. The development of a small lake on the campus remains a possibility; and if constructed, it would provide a limited facility on campus for the outdoor water program.

The space needs described herein are predicated on an anticipated peak class period physical education enrollment of 500 students. The indoor facilities are intended to provide space for 300 students. Of those enrolled at the peak load periods, it is anticipated that a maximum of 500 will need to dress and shower at one time. Based on the experience of established community colleges, it can be expected that the distribution between men and women will be two-thirds men and one-third women. Dressing and shower facilities have been prorated accordingly.

Table 10.1: Summary of Estimated Indoor Physical Education Space Requirements for the South Campus of Seattle Community College

Space Description	Area Per Unit (Square Feet)	Number of Units	Total Space Needs (Approximate Square Feet)
A. Instructional Area			
Gymnasium		1	12,000
Natatorium		1	9,100
Combination Rooms for Dance and Remedial Programs	1,000	2	2,000
Storage		1	150
Combination Rooms for Gymnastics, Tumbling, Weight Lifting, and Wrestling	1,200	2	2,400
Storage		1	240
Handball Courts	1,058	4	4,232
Classrooms	(a)	2	(a)
Sub-Total			30,122
B. Auxiliary Area			
Men's Dressing and Shower Area		2	5,000
Women's Dressing and Shower Area		2	2,500
Faculty Dressing and Shower Rooms		2	800
Equipment Check-Out and Storage Room		1	500
Laundry and Drying Room		1	500
Storage Rooms		4	1,500
Sub-Total			10,800
C. Space Included Elsewhere			
Departmental Office		1	(a)
Faculty Offices		11	(a)
Mechanical Room		1	(a)
TOTAL			40,922

(a) Requirements are included elsewhere in this Report.

Table 10.2: Summary of Outdoor Physical Education Space Requirements for the South Campus of Seattle Community College

Space Description	Number of Units
Archery Range	1
Athletic Fields	2
Tennis Courts	8
Handball Courts	8
Outdoor Basketball-Volleyball Area	1
Horseshoe Courts	6
Climbing Rock	1
Equipment Storage Buildings	2
Approximate Area required: 15 acres	

Space Description and General Facility Requirements

General Requirements

Following are general requirements which need to be met when planning the physical education facilities:

1. All indoor space used for instructional purposes, along with dressing and drying areas, should be mechanically ventilated.
2. A built-in communication system to all indoor and outdoor instructional areas should be provided. A portion of the system serving the pool, gymnasium, and outdoor track and field should be so constructed that it can be used for group instructional purposes and to announce sports contests.
3. Windows of indoor instructional areas should be located so as to avoid glare during class periods.
4. All rooms used for lectures and general instruction should have conduit for educational television and pull-down screens for visual projections.
5. All indoor instructional rooms should have wall electrical outlets for audio-visual aids. Electrical outlets are needed elsewhere throughout the indoor area for electrically operated cleaning equipment.

6. The floor surfaces of all areas should be of material which can be efficiently cleaned.
7. Each classroom should be equipped with at least 12 linear feet of tack board space. In addition, at least 12 linear feet of tack board space, probably in two sections, should be provided just inside the main entrance. At least 12 linear feet in two sections is needed in the gymnasium.
8. One or more display cases should be provided just inside the main entrance to the building. Two glass-covered "Official Notice" cases, each approximately 2 feet by 2 feet, are needed near the entrance to the gymnasium.
9. The indoor space should be arranged so that the dressing and shower facilities are accessible from the exercise areas.

Gymnasium (100 feet by 120 feet=
12,000 square feet)

This facility should accommodate between 30 and 100 students for instructional purposes. It will provide the following facilities:

1. A regulation-size basketball court, 50 feet by 94 feet, located in the center of the area with a minimum safety zone of 10 feet at each end.
2. 2 basketball cross courts, 42 feet by 74 feet each.
3. 3 volleyball courts, 30 feet by 60 feet each.
4. 6 volleyball courts, 20 feet by 44 feet each.
5. An indoor running and calisthenics area.

Basketball backboards should be located 4 feet from the end lines. All backboards should be retractable; and it is essential that those for the main court be retractable, preferably electrically. A ceiling height of 25 feet is needed throughout. Retractable bleachers should be installed along both side walls. These can extend outward and may open to within 6 feet of the main basketball court. They should provide seating for between 500 and 800 spectators.

Sufficient glare-free artificial lighting should be provided to eliminate shadows. Windows, if used, should be located not less than 10 feet from the floor.

The walls of this facility should be kept free of projections on which to hang equipment, etc. A storage room approximately 8 feet by 10 feet should be constructed directly adjacent to this facility. It will serve as a place to store badminton and volleyball standards and nets, scoring equipment, folding chairs, etc. The door should be 8 feet in height to facilitate moving volleyball standards in and out.

Consideration should be given to installing colored floor boards to provide, in part, markers for various courts. It is important that floor plates be installed for securing volleyball and badminton standards.

Natatorium (9,100 square feet)

This facility will provide instructional space for approximately 45 students during a given class period. It is recommended that the pool be rectangular shaped to obtain the maximum utilization of the facility. The main pool should have a water depth of 3 feet 6 inches for a distance of approximately 10 feet to 15 feet from one end. It should then slope downward to a depth of 8 feet for the remainder of the distance. This will allow for diving from the edge of the pool and for aquatic performances. The diving portion of the pool should be 3 feet 6 inches deep on one end of the pool for a distance of 4 feet. It should then slope steeply downward to a depth of 15 feet and maintain this depth throughout the remainder of the length of the pool.

There should be 3 one-meter and 1 three-meter diving boards. They should be staggered slightly in terms of their position on two sides of the pool, with the three-meter board being located nearest the swimming pool area. No board should be closer than 8 feet to the side of the pool, and the boards should be at least 10 feet apart. There should be at least 12 feet of unobstructed space above the top of each diving board. Intercollegiate regulations require that boards used for competitive purposes be constructed of wood. Cocoa matting or other non-slip finish which is easily removable should cover the entire length of each board.

All swimming lanes need to be 7 feet wide, the official width. The lane line, on the bottom of the pool, needs to mark the center of each lane and be 10 inches wide. It should begin 4 feet from each end of the pool. Lane and all other pool markings should be set in tile.

A storage area, accessible only from within the pool for reason of safety, is needed to store such items as starting blocks, the instructors' and lifeguards' stands (both of which should be collapsible to conserve space), chairs, pool dividers, etc. Retractable bleachers should be installed which will seat approximately 100. These are needed to give instruction and demonstrations and can also serve as seating for spectators at aquatic performances.

Combination Rooms for Dance and Remedial Programs (3,000 square feet)

These two rooms will serve between 40 and 60 students for the class period. In addition to providing facilities for the dance and remedial programs, they will serve as general classrooms. They need to be equipped with collapsible chair desks which can be stored in an adjoining storage room when the classroom is used for other purposes. Adjustable wall bars should be installed along two walls. One wall should contain several full-length mirrors. Windows, if provided, will need to be approximately 8 feet above the floor to preserve wall space for the above-mentioned equipment. Since these rooms will be used extensively during the daytime, they should be located so as to obtain a maximum amount of natural lighting.

Storage space should be provided for at least one piano, three phonographs, records, and rhythm instruments. With careful planning, one such storage area (sufficiently large to push a piano through) can serve all three rooms with a door opening onto each room.

At least one portable dolly is needed to hang and store floor mats. This dolly can be stored with the piano and other equipment and moved wherever the mats are desired. The common practice of hanging mats on wall hooks is most unsatisfactory on several counts. First, students are inevitably removing them when they are not in use. Second, they distract from the attractiveness of the area. Third, mats are usually dragged to and from their hanging location which wears them out and gets them dirty. With a portable dolly, mats can be transported directly to where they are to be used. Furthermore, fewer mats will be required to satisfactorily equip the three rooms.

Combination Rooms for Gymnastics, Tumbling, Weight Training, and Wrestling (3,000 square feet)

These two rooms should be planned to serve different purposes. Also, it is desirable to vary the sizes. Together, the two rooms will serve between 40 and 50 students per class period.

One of the rooms should contain all of the gymnastics equipment, consisting of balance beams, climbing ropes, chest weights, stall bars, parallel bars, rowing machines, stationary bicycles, high bars, flying rings, side horses, traveling ropes, horizontal ladders, and bucks. Floor plates for attaching equipment should be built in. The location of the flying rings should allow at least 15 feet at the end of the swinging arc. The portion of the area in which the high bar and high rings are located needs a minimum ceiling height of 18 feet.

It is essential that the gymnastics room have a rather large adjoining storage room. This will permit making the room smaller and still adequate, since equipment which is not being used can be removed from the room. Further, it reduces the chances of injury by students attempting to show off on idle equipment. Here again, a single storage area, properly located, can serve all three of these rooms. If possible, the storage room should open onto the gymnasium so that the gymnastics equipment can be used for such purposes as exhibitions and demonstrations. It is important that all doors through which this equipment will be moved are large enough to serve this purpose. These should be sliding rather than hinged type doors to reduce the danger of injury to performers.

The tumbling room needs to be equipped with spring boards, a trampoline, and floor mats. A portable mat dolly is needed to transport floor mats. The storage room should be large enough to provide space for the trampoline. It is important that this piece of equipment be stored when not in use, or there will be injuries resulting from its unauthorized use. Further, by storing it along with the other equipment, the room can be used as a general classroom. This will necessitate a set of folding chair desks.

If proper storage space and movable mat dollies are provided, the weight lifting and wrestling room can readily be converted to general classroom use. This room should be equipped with a complete set of weights and floor mats.

The ceiling height should be 10 or 12 feet in these two rooms except in the high ring and high bar area where a greater height is required. Window sill heights should start approximately 8 feet above the floor and, if possible, should extend the length of at least one wall. Glare-reducing glass should be used if the direct rays of the sun strike the window area.

Handball Courts (4,232 square feet)

These four courts, when used for handball or squash, will provide facilities for 16 students at a time. When used for other purposes, each court can accommodate up to 20 students for a total of 60. It is important that these courts be of official A.A.U. dimensions for four-wall handball which are 23 feet wide, 46 feet long, and 23 feet high.

The entire interior surface should be smooth. Lights need to be recessed and covered by unbreakable glass. Light switches should be located outside of the court. Doors should be of heavy wooden construction so that the bounce of the ball from them will not differ from that of surrounding walls. However, it is recommended that the doors be at least of normal size to facilitate using the space for other purposes including moving a floor mat dolly in and out. It should have a small panel of shatter-proof glass.

Each court should be equipped with electrical outlets. These are needed for cleaning equipment and for teaching aids. A drinking fountain should be located just outside of the courts. If possible, a small observation room (approximately 5 feet by 7 feet) should be provided and so located that it permits observing the activity in all four courts through shatter-proof windows and openings through which to speak.

Floors should be of hardwood and in natural color. Walls may be of wood or masonry, but not plaster which tends to crack and crumble. Ceilings may be either of a hard plaster or wood. Walls and ceilings should be painted a matte white or buff color.

Dressing and Shower Areas (7,500 square feet
Men's 5,000, Women's 2,500)

Dressing and shower facilities for both men and women need to be planned so that at least a part of them can be made available for swimming while locked off from the remainder of the indoor physical education facilities. This requires that the dressing rooms can be entered from three different points: (1) the outside, (2) the natatorium, and (3) the other indoor physical education facilities. The specifications which follow are based on the assumption that a maximum of 500 students will be dressing and showering at one time. As already stated, the anticipated ratio of men to women is 2 to 1. Further, a somewhat higher proportion of men to women who are engaged in physical activity take showers. Therefore, the specifications which follow are planned to serve 350 men and 150 women at peak load.

These facilities should have the following features:

1. Shower and drying area drain toward the sides instead of the center. Drains need to be adequate to carry away water during peak loads.
2. Shower heads should be of the ball and socket type and mounted approximately 6 feet from the floor (slightly lower for women).
3. Liquid soap dispensers should be provided. These should be interconnected to permit filling at one point.
4. Ample dressing mirrors are needed with several being full-length in the women's dressing area.
5. At least two drinking fountains should be provided in the men's dressing area and one in the women's.
6. Floor surfaces should be of material that is easy to clean; will not crack, chip or scratch from cleats; will not absorb moisture; and is non-skid for bare feet.

The shower arrangement for men and women must be basically different. For men, gang showers are proposed; whereas, for women, it is recommended that approximately half of the area be devoted to individual dressing and shower cubicles. These cubicles should have a dressing area of about 3 feet by 3 feet and equipped with a built-in bench and non-corrosive clothes hooks. The dressing and shower compartments should be separated by a curtain or a permanent partition. Each shower compartment must have its own drain. Hair-drying equipment in the women's dressing room is essential because of the swimming pool. Two or three group-type dryers installed in the wall will suffice. However, individual drying units are somewhat more satisfactory. In either case, they should be placed at sitting height with permanently installed benches for their use.

The "open rack" method of clothes and equipment storage is recommended. This method works as follows:

1. Each student is issued a basket at the beginning of the year containing a towel and whatever athletic costume the College chooses to provide. The basket is numbered and equipped with a combination lock. The baskets, with the equipment which has been provided, are stored in a permanent basket rack which contains the same number as the basket.
2. When the student enters the dressing room he gets his basket and proceeds to a half-length dressing locker. After changing to his gymnasium clothing, he locks his street clothes and basket in this locker.
3. Upon returning from physical education he showers, dresses and exchanges his soiled towel (and other clothing if this service is provided). He then places his equipment in his basket and locks the basket where it remains until he returns.

With this arrangement, the anticipated men's physical education enrollment can be adequately served with 200 half-length lockers and 1,000 storage baskets. (If desired, 500 storage baskets can be installed initially with the others easily added later.) In addition, there should be 30 full-length lockers for varsity athletes. The women can be adequately served with 100 half-length lockers and 500 storage baskets.

The area required for the men's dressing and shower facilities is approximately 5,000 square feet and for the women's facility approximately 2,500 square feet, or a total of 7,500 square feet, plus 500 square feet for the equipment and supply cage to serve both men and women.

Temperature controls should permit increasing the temperature of the dressing area when large numbers of swimmers are using that facility.

Faculty Dressing and Shower Rooms
(800 square feet)

A dressing and shower facility is needed for both the men and women physical education faculty. The facility for men should accommodate 10 instructors and the one for women, 5 instructors. Each should be equipped with sufficient full-length lockers for each member, a toilet unit, two individual shower units for the men and one for the women, permanent benches, and a wash basin. The women's facility should contain a hair dryer and full-length dressing mirror.

These dressing and shower rooms should afford easy access to both indoor and outdoor activity areas. This facility should be available to all faculty members who wish to use the physical education facilities for personal activity.

Laundry and Drying Room
(500 square feet)

Space and utilities should be included in this area for three automatic washers and two dryers if the College is to provide towel service. Additional laundry equipment may be required if athletic clothing is to be washed. There are companies which lease and service automatic washers and dryers for educational institutions. If commercial laundry equipment cannot be installed, it is suggested that exploration be made into leasing this equipment.

This room should have a work counter at least 10 feet in length, 30 inches in width, and 3 feet in height. Storage shelves can be installed under this counter. In addition, it should contain bins for soiled towels and such other items as may be laundered. It is recommended that portable bins be used, since they can be wheeled from the equipment check-out area to the laundry.

It is recommended that racks for hanging uniforms be suspended from the ceiling. The hangers should be of sturdy, non-corrodible material. Whatever wall area of this room is not required for drying uniforms, laundry equipment, and storage of laundered items should be utilized for equipment storage. If items sold to students are stored, the shelves or cabinets should be equipped with locks.

This facility needs to be located in close proximity to the dressing check-out cage.

Also, some provision must be made for the quick drying of student-owned bathing suits.

Indoor Equipment Storage
(1,500 square feet)

At least four such rooms are needed. As already noted, one is needed for the two gymnastics rooms, one for the two rooms proposed for the dance and remedial programs, and one for the gymnasium. Another is required to store athletic equipment. This room should be adjacent to the equipment check-out room in the dressing area and directly accessible from it so that all equipment can be issued from a central location.

Outdoor Facilities

Archery Range
(50 yards by 125 yards)

A target archery range consisting of 10 targets is needed. Targets should be placed between 12 and 15 feet apart. An unobstructed distance of 125 yards is required, which includes 25 yards behind the targets.

Athletic Fields
(110 yards by 250 yards)

These two fields will serve multiple use. Three softball fields or two softball and one baseball fields and backstops can be laid out on this area. In addition, it will serve as an area for two football, one soccer, two field hockey, and two speedball fields. Official dimensions for each of these fields are as follows:

1. Football	160 feet by 360 feet
2. Soccer	225 feet by 360 feet
3. Speedball	160 feet by 300 feet
4. Field Hockey	150 feet by 270 feet

In addition, golf fundamentals can be taught on this area; and it can be used for group calisthenics and running. A grass turf covering should be provided.

Tennis Courts
(144 yards by 160 yards)

Eight official doubles courts should be provided. The dimensions for each court are 36 feet by 78 feet. Allowing for side and end space, each pair of doubles courts will require 108 feet by 120 feet.

It is possible to use this area for badminton and volleyball, which will require portable standards which can be stored nearby. Fittings for their installation should be provided at the time of construction.

An all-weather surface is needed for these courts. Recently, several new and excellent surfaces have been developed. The relative merits of these should be analyzed.

Handball Courts
(40 feet by 200 feet)

Eight outdoor handball courts are recommended. These should be either one-wall or three-wall courts. The three-wall game is becoming increasingly popular. Approximate measurements for the three-wall court are 23 feet by 40 feet, with the wall 16 feet high. The side walls extend back for approximately 4 feet at wall height after which they angle off and become gradually lower until they cease at about 12 feet from the end wall. Five feet is needed beyond the back line.

The standard dimensions of a one-wall court are 20 feet by 34 feet with the end wall 16 feet high. An area 5 feet to 8 feet is needed between one-wall courts (but not three-wall courts) and about 8 feet beyond the back line. Consequently, the two types of courts require approximately the same area.

The floor area should be of smooth concrete construction and the walls either concrete or smooth reinforced cement block.

Outdoor Basketball-Volleyball-Tennis Practice Area (45 feet by 200 feet)

To obtain this area, the back side of the handball wall should be surfaced with smooth concrete for a distance of 40 feet to 45 feet and the full length of the wall which is approximately 200 feet. This area will provide for the following:

1. 4 basketball goals (projecting 6 feet from the handball wall).
2. 8 badminton courts.
3. 3 volleyball courts.
4. Practice space for 6 to 8 tennis players.

Fittings should be included at the time of construction for installing volleyball and badminton standards.

Horseshoe Courts

(60 feet by 96 feet)

Six horseshoe courts should be provided. Each court requires an area of 6 feet by 46 feet. With the required safety areas, the minimum dimensions for each court are 16 feet by 60 feet.

Track

A 440-yard oval track running around one of the athletic fields is recommended. One side should be extended so as to have a 130-yard straightaway. There should be six lanes of 42 inches each on the oval with seven lanes for the 130-yard straightaway. This means an overall width of 21 feet for the oval and 24 feet, 5 inches for the straightaway.

The broad jump and the pole vault runways should each be at least 130 feet long and 4 feet wide. The high jump should form an arc with a 60-foot radius to a jumping pit which measures at least 12 feet long and 16 feet wide.

The running track needs a surface from 4 to 6 inches deep, composed of a mixture of clay or loam and finely-ground cinders, crushed shell or brick, pumice, perlite, or similar material.

Portable bleachers to seat 500 should be located midway on the straightaway side of the track.

Climbing Rock

If possible, a rock (natural or artificial) should be located in the physical education area to be used for instruction in mountain climbing. This rock should be 12 feet to 15 feet high and approximately 20 feet in diameter at the base.

Equipment Storage Area

(1,000 square feet)

Two storage sheds need to be located at strategic sites on the outdooor physical education area. They should have concrete floors and wide sliding doors with as much height as possible. These two buildings should provide approximately 1,000 square feet of storage area.

Space Relationships

To the extent possible, the following guidelines on location of the physical education facilities should be followed:

1. These facilities should be located as near as possible to the College Community Center. This is especially important for the indoor facilities, since the more convenient these facilities are the more they will be utilized voluntarily by students.
2. The gymnastics, tumbling and wrestling rooms should connect with one another. In addition, the gymnastics room should open onto the gymnasium.
3. A single equipment check-out room has been recommended. It is essential that this room be located where both men and women have easy access to it from their dressing and shower areas.
4. For safety and health reasons the only accesses to the swimming pool should be through the dressing and shower rooms, since it is anticipated the swimming facility will be made available to the general public. Therefore, access to these dressing facilities needs to be from a corridor that leads directly outside so that at these times the general public can be excluded from other indoor facilities. This arrangement is also needed so that students using the outdoor facilities can go directly to the dressing and shower areas.
5. The outdoor physical education areas should, if possible, be located so that students do not have to cross busy streets to get to them.

Figure 10.1 shows the proposed relationships of the physical education facilities to other campus facilities, and Figure 10.2 shows the same among the indoor facilities. Figure 10.3 shows the relationships among outdoor facilities.

Figure 10.1: General Relationships of Physical Education Facilities to Other Facilities

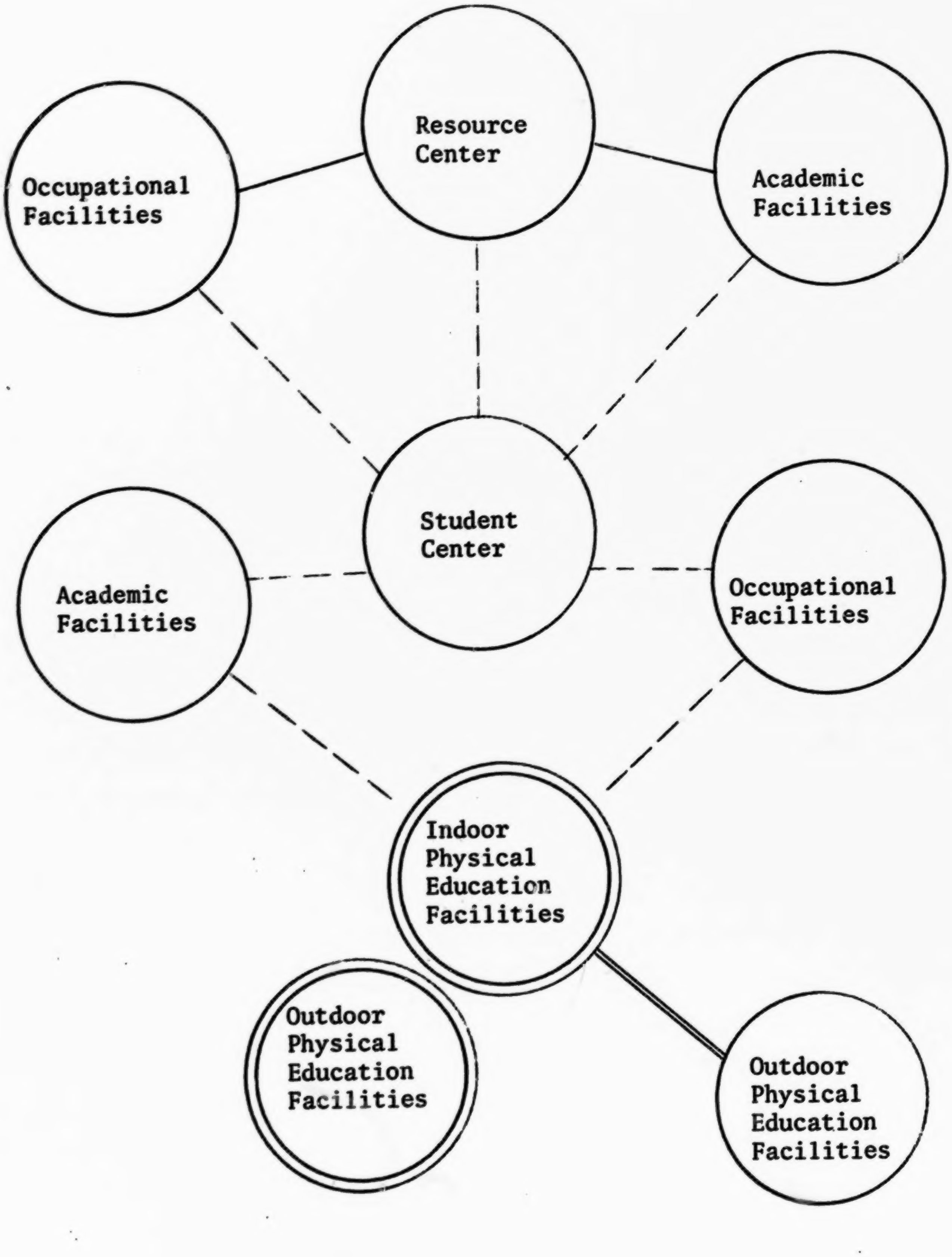


Figure 10.2: Relationships Among Indoor Physical Education Facilities

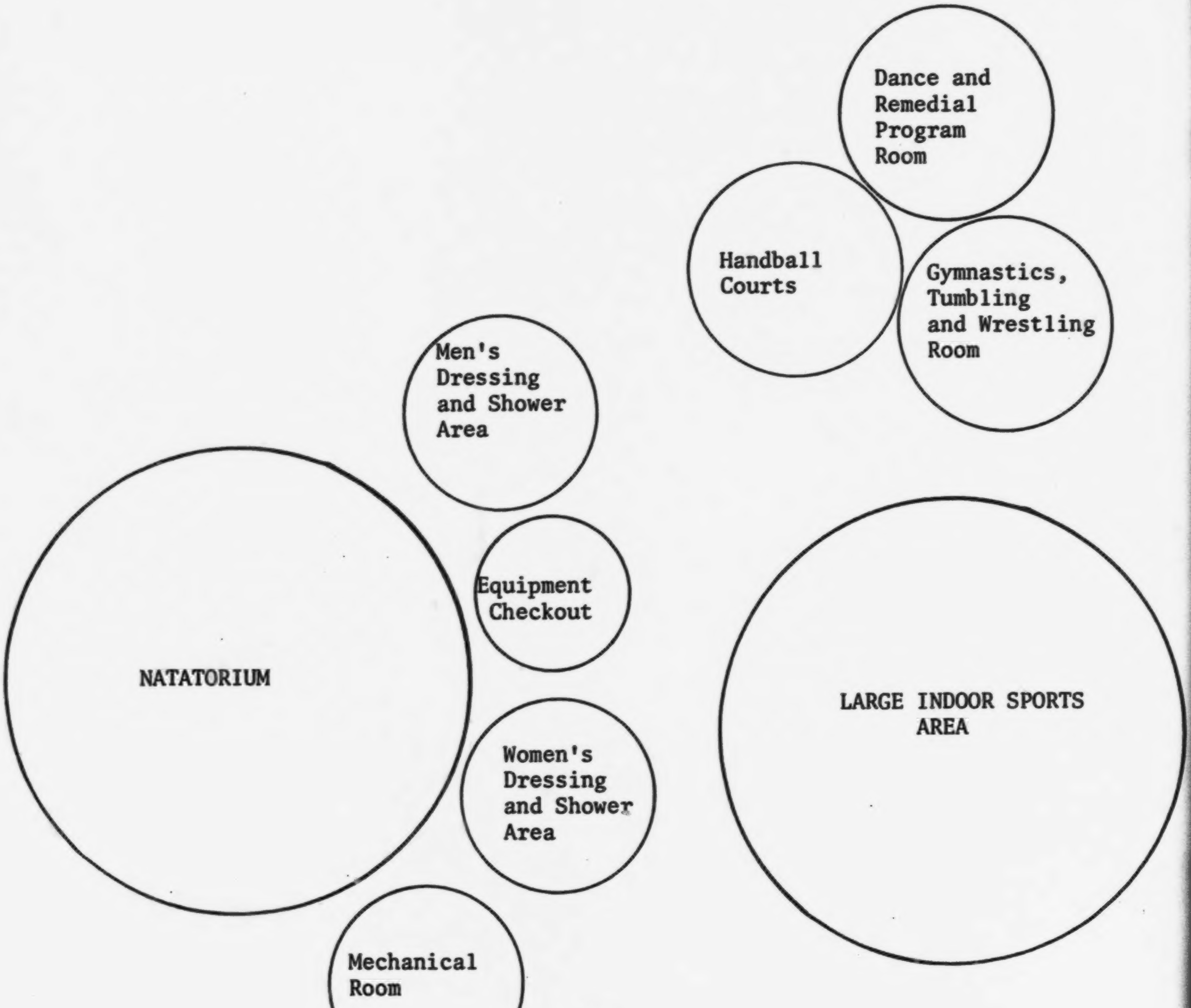
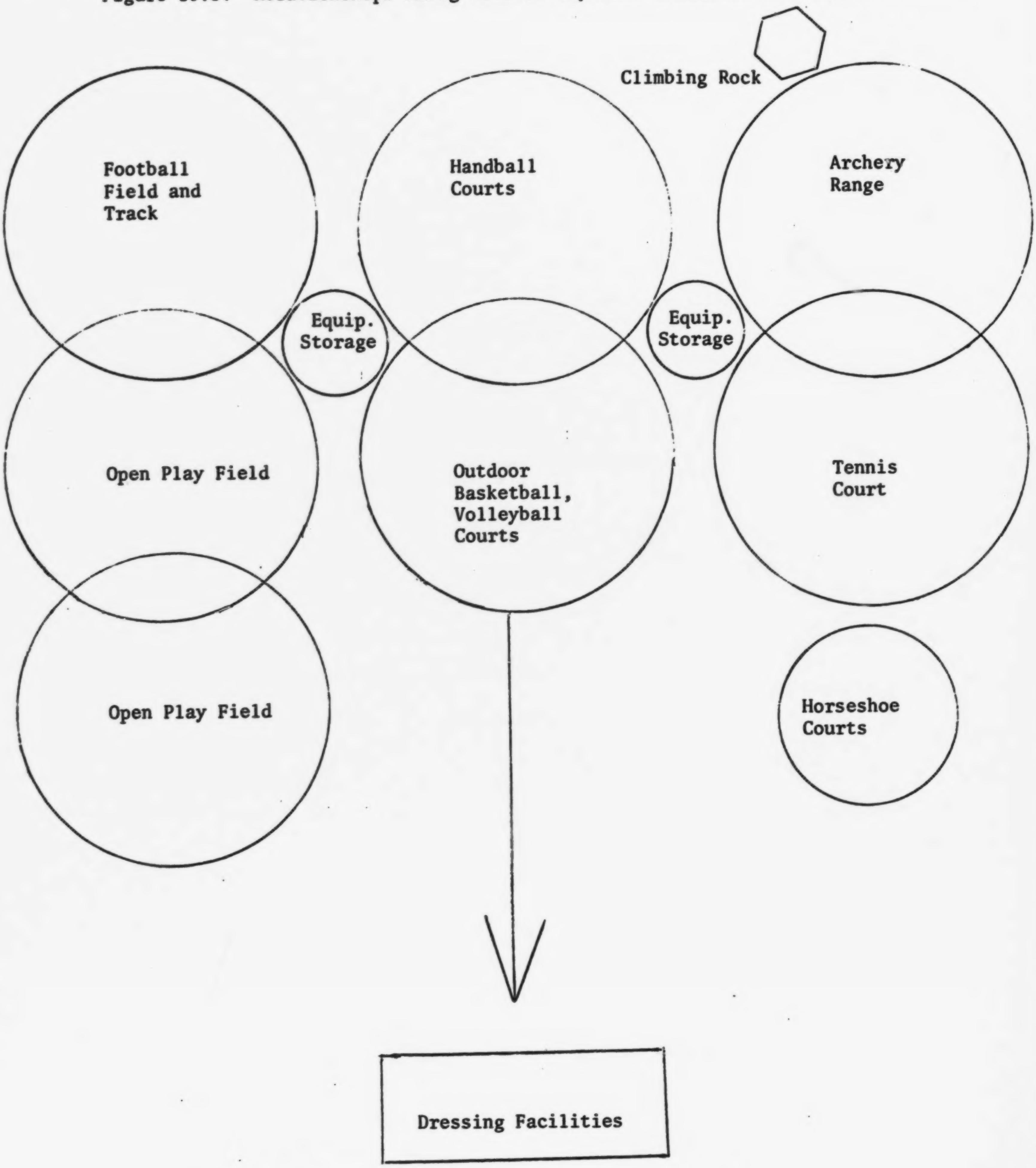

Dance and Remedial Program Room
Handball Courts
Gymnastics, Tumbling and Wrestling Room
Men's Dressing and Shower Area
Equipment Checkout
NATATORIUM
LARGE INDOOR SPORTS AREA
Women's Dressing and Shower Area
Mechanical Room

Figure 10.3: Relationships Among Outdoor Physical Education Facilities



CHAPTER XI

TEACHING AND FINE ARTS AUDITORIUM

Philosophy and Objectives

The Fine Arts Auditorium will be used as a teaching space about seven weeks out of the school year by the Drama Department.

The department of music will use this auditorium for all school chorus and instrumental programs. Some musical recitals will also be presented in this facility.

The department of speech will use the facility for practice speeches before an audience.

It is planned that all cultural programs, student programs, and certain select community programs will be presented in this facility.

The Fine Arts Auditorium is conceptualized as the central core of the cultural enrichment programs to be offered by the College. It is viewed as the center where the performing arts exhibit their wares and where the student body assembles to be entertained in a constructive manner.

Instructional Aids, Equipment, and Furniture

The Auditorium shall be equipped with upholstered seats, microphones, amplifiers, and a control booth for the recording of musicals, speeches, etc.

Lighting for the stage and the auditorium shall be of a quality and of a flexibility that will make possible lighting levels ranging from that required for a Shakespearian production to that required for a musical comedy. A secondary control lighting booth located in the auditorium with full view of the stage shall be provided.

A projection booth for movies should be provided, and a commercial size screen should be available on stage with retracting potential.

A ticket sales booth and a lobby area should be provided.

Location

The Fine Arts Auditorium shall be located so that it is readily available to the drama teaching area, the music teaching area, and the speech teaching area. In addition, it should be located convenient to automobile parking and in proximity to the food service area for after theatre snacks. Because of its contribution potential to the community, it should be easily identified by the adult visitor.

Special Conditions

The Music Department will use the Auditorium extensively. If the stage of the Auditorium is so located in relationship to the band practice room and the chorus practice room that these areas can be used as tune-up rooms for major musical programs being presented, it will save considerable behind-stage space.

The Auditorium shall be composed of four areas:

1. The acting area
2. Scenery space
3. Working and storage space
4. Spectator seating space

Acting Area

1. Proscenium (audience in one compact group within a narrow, horizontal angle; performers relate their actions to the whole audience simultaneously).
    a. Shape--quadrilateral space within the proscenium (picture frame) arch extending upstage from the audience.
    b. Size.
        (1) Proscenium opening--maximum 50 feet; minimum 26 feet.
        (2) Quadrilateral acting area--maximum 50 feet by 25 feet; minimum 25 feet by 20 feet.
2. Open or thrust stage (recalls production styles of Elizabethan England; therefore, accommodates Shakespeare's best).
    a. Shape--semicircle, quad, or polygon projecting from a proscenium or from an architectural facade; there is seating on three sides of this arrangement.
    b. Size--acting area--maximum 25 feet by 35 feet; minimum 20 feet by 26 feet.

3. Arena (arrangement minimizes scenery and maximizes performer-audience intimacy).
    a. Shape--circle, square, rectangle, polygon, surrounded by seating; entrances from diagonal corners and in the middle of one or both long sides.
    b. Size--maximum 30 feet by 25 feet; minimum 20 feet by 15 feet.

Scenery Space

Scenery establishes local atmosphere and mood. Locale and action of many plays demand rapid and easily made changes of scenery which require proper space and equipment to perform each function.

1. Broad function of scenery.
    a. Encloses and delineates the acting area.
    b. Supplies openings of proper form and in sufficient number and location so that the actors may enter and exit the acting area.
    c. Masks the stage wall, machinery crews, and actors awaiting entrances.
2. Proscenium--space surrounding the acting area. The scenic emphasis of the proscenium stage demands space sufficient to accomplish its basic function: to create illusions--three dimensional or two dimensional. Many sets require a space twice as deep as the acting area and one and one-half times as wide. These requirements are established by the scenic functioning that takes place during the production. The production which requires varied and quickly changed sets represents the peak load of the stage space.
    a. Scenery space must be cleared off of one set before another can be brought on to it.
    b. There must be storage space to accommodate all the sets.
    c. Paths of movement of scenery must be cleared of obstacles.
    d. The fewer the pieces into which a set must be divided to strike it and the fewer parts which must be fitted and joined to assemble it, the more rapid the scene shift and the better the scenery.
    e. Scenery occupies space when stored.

Methods

1. Running
2. Rolling divided wagons
3. Rolling jackknife wagons

4. Revolving stage
5. Fly galleries

Floor

It is essential that the stage floor be considered an important part of the stage equipment, designed especially for its particular uses--a suitable level upon which the actors may perform, adaptable to the requirements of several or all types of performances, and a level upon which scenery may be set and shifted.

1. Many plays demand entrances through the stage floor in the form of stage traps.
2. Red line essential.

The stage floor should be of tough, wear-resistant wood which at the same time is receptive to nails and hand-driven stage screws. No maple, birch, oak or other hardwood flooring should be used.

Backstage Operations

1. Adjustment of permanent equipment--varying demands of theatrical production; stage equipment (floor, act curtains) either movable or removable.
    a. Fly equipment--transistorized, electronic.
    b. Cyclorama--permanent.
    c. Light bridge for cyclorama.
2. Lighting and sound equipment.
    a. Lights.
        (1) Three beams before proscenium arch with light bridges.
        (2) Number of light battens behind proscenium depends upon size of stage.
        (3) Miscellaneous.
            a. Patch panel backstage.
            b. Light booth--rear of audience with view of stage.
            c. Communicating with stage manager and director in the audience.
    b. Sound--separate speaker system for both backstage and auditorium. Both systems would, however, be controlled from the same booth, preferably the lighting booth

Dressing Rooms

Location--central to all backstage; large dressing rooms with make up tables with sufficient lighting and mirrors, costume racks, showers (2 or 3 in each dressing room), and a toilet in each dressing room.

Loading Door

9 feet wide--12 feet high at side of stage.

Loading Platform

Roofed; average van height; avoid change of level.

Receiving Space

Minimum of 200 square feet, 20 feet high.

Green Rooms

Rooms where a performer waits his time to enter on stage shall be provided, one for each sex. Because of their function, their location shall be readily accessible to the stage.

Space Needs

Auditorium (300 to 400 seats)	4,000 square feet
Acting Area--Proscenium, 50 feet by 38 feet	1,900 square feet
Apron, 12 feet by 50 feet	600 square feet
Wings, 30 feet by 38 feet	2,280 square feet
Backstage, 110 feet by 40 feet	4,400 square feet
TOTAL	13,180 square feet

CHAPTER XII

MUSIC FACILITIES

Philosophy and Objectives

The music program of the College has a much broader base than the physical confines of the Music Department and those students who normally call this home. The program must serve the College and, beyond this, the community. The Music Department should function as a leader in the music arts for the community. Offerings other than academic courses should include concerts, guest recitals, community choral programs, and general cultural opportunities in music. Ideally, at least twenty percent of the South Campus student body will somehow rub elbows with the Music Department at least once a week. As much as possible, the music program should serve a public relations function, not only to develop interest in music but general interest in the College. The music program must recognize the need for all individuals to express themselves, and it should encourage participation on as wide a basis as possible. The music program must recognize the diversity among those it will serve. They will range from the serious music student to the person, perhaps an adult, who joins a music activity simply because he has some free time in the evening with nothing else to do. The music program, in much the same way as the art program, must realize its responsibility for affecting a cultural change primarily in the student and the College, and secondarily, the community.

The Educational Program

1. Pre-professional--traditional lower division music courses for college transfer.
2. General music--this includes music appreciation, introduction to music, courses that would be taken by students who are four-year oriented in other than a music major, as well as students in occupational areas.

3. Adult music--music which would be offered to adult groups as adult general education and would be involved in choral or instrumental ensembles.
4. Occupational music--this would be instruction which might provide for television arranging, proficiency for playing in small combos, etc. It is recommended that facilities be considered for the development of a program in this area.
5. Individual instruction is not a substantial part of the music curricula at the South Campus. The emphasis of the curricula is on group instruction.

Table 12.1: Music Spaces Needed for the South Campus of Seattle Community College

Type of Space	Number of Units	Approximate Total Space (Square Feet)
Combined Music Studios Practice Rooms	3	360
Practice Rooms	8	740
Music Classrooms with Electronic Piano Storage	1	920
Instrumental Ensemble Room	1	3,000
Instrumental Storage & Uniform Room	1	480
Choral Ensemble Room	1	1,600
Choral Music Storage & Uniform Room	1	200
Small Ensemble/Classroom	1	520
General Classroom	1	(a)
Recital Hall	1	(a)
Evening Music Faculty Offices	-	(a)
TOTAL INTERIOR SPACES INCLUDED IN THIS CHAPTER	19	7,820

(a) Requirements are included elsewhere in this Report.

Individual Space Considerations

Physical requirements for the following types of spaces are:

1. Music studio
2. Individual and small group practice rooms

3. Music classroom (including electronic piano storage)
4. Instrument rehearsal room
5. Instrument storage and uniform room
6. Choral rehearsal room
7. Choral music storage and uniform room
8. Small ensemble/classroom

Combined Music Studio/Practice

Three of these spaces should be provided. Each space will require 120 square feet of assignable area. Each space should be designed for use by one instructor and three or four students.

This space is intended to be used primarily as a faculty studio for individual and small group instruction and as a practice area for faculty and students.

Music faculty offices should be located adjacent to the music teaching studios. Conferences between students and music teachers often involve the discussion of interpretation, tone production, technical facility, and other aspects of musical performance. Discussions of this nature rightly belong in the Music Department complex where pianos and recording equipment are readily available.

The development of performance skills is an important function of the music major's program. Thus, individual instruction creates a need for several studios to be utilized for this purpose. These studio-practice rooms would be used continuously throughout the day and shared by faculty and students.

The request for faculty offices for the music faculty in the music area will not preclude participation in the total program of the comprehensive campus. It will be the purpose of the Music Department to provide a service that will have a unifying effect on the entire student body through concerts, lecture-demonstrations, cultural leadership, and a variety of performing groups available to all students of the College. With adequate facilities and a knowledgeable faculty vitally interested in the community college philosophy, this goal can be reached.

Nature of Activities to be Housed

Typical student activities will include receiving music instruction, playing musical instruments, questioning, interpreting instructor's instructions, questioning instructor about student's program, personal problems, etc., and singing.

Typical professional activities will include demonstrating instrument techniques, explaining music theory, demonstrating the use of instruments, listening to student performances, counseling individual students about programs of study and personal problems, writing, practicing musical skills, reading, and dictating.

Equipment and Furniture--Built-in

1. Air-conditioning is strongly recommended
2. Standard lighting treatment
3. 4 feet by 18 inch mirror
4. Acoustical treatment; floors, ceilings and walls
5. Convenience outlets along walls on the 10-foot centers
6. Tack board, 4 lineal feet
7. Chalk board, 8 lineal feet (staff lined)
8. No windows
9. Standard door

Equipment and Furniture--Movable

1. 7 feet by 5 feet grand piano with bench (in one of three studios).
2. 5 feet by 4 feet upright piano with bench (in two of three studios).
3. 1 five-drawer metal legal file.
4. 30 lineal feet of standard bookshelves.
5. Standard office cabinet with shelves.
6. 1 instructor's chair.
7. 4 straight-back student chairs without arms.
8. 1 music stand.
9. 1 metronome.
10. 1 record player.
11. 1 tape recorder.

Practice Rooms

It is recommended that eight practice rooms be provided. Five spaces will require 70 square feet of assignable area and should be designed for use by one to three students. These spaces will require 130 square feet and should be designed for use by 6 to 9 students. These spaces are intended to be used primarily for single or small group student music practice. It should be recognized that heavy use of these spaces is anticipated both during the day and evening. While not primarily instructional spaces, these spaces house activities which directly support the instructional program in music.

Nature of Activities to be Housed

Typical student activities will include practicing piano, voice and other musical instruments. Although these spaces are intended primarily for student use, it is anticipated that occasionally some music instruction will take place in these spaces.

Equipment and Furniture--Built-in

1. Standard lighting treatment
2. Acoustical treatment; floors, ceilings, and walls
3. Air-conditioning strongly recommended
4. No windows
5. Standard door treatment with small window
6. 2 convenience outlets along walls

Equipment and Furniture--Movable

1. 4 feet by 5 feet upright piano with bench (in three of eight rooms).
2. 1 music stand.
3. 3 straight-back student chairs with no arms.
4. 4 feet by 18 inch mirror.

Music Classroom

It is recommended that one classroom be provided. This space will require 720 square feet for classroom area and an additional 200 square feet for storage. This space should be designed to accommodate 30 students.

This space is intended to be used primarily for two functions:

1. As a general classroom in support of the music program.
2. As a special purpose, large group piano instruction laboratory. Innovations have recently led to the possibility of mass piano instruction through the use of small electronic pianos. Up to 24 students can effectively be taught simultaneously in one common space. With a minimum of additional design consideration, a general classroom can be equipped for this type of instruction. During periods when this space is not being utilized for piano instruction, the space would be available for general classroom use. In some respects, this space would require similar equipment as a language laboratory--a control teaching station console and electrical and control cables to each (24) station. In addition, a large (200 square

feet) storage area at the rear or side of the space would be required for the storage of the electronic pianos during periods when the room is being utilized as a general classroom.

3. The acoustical qualities of this room should reflect the activities held here. This space may also be used for small ensemble instrumental groups and small choral groups when not in use as a piano classroom.

Nature of Activities to be Housed

Typical student activities will include playing electronic pianos, listening through earphones, discussing, listening to lectures, taking notes, reading, and questioning the instructor.

Typical professional activities will include lecturing, leading discussions and criticizing, demonstrating piano techniques, using chalk boards, and using electronic piano consoles.

Equipment and Furniture--Built-in

1. 4 rows of 6 electrical outlets (connected with master control at the front of room) recessed to floor level.
2. Chalk board, 16 lineal feet (unlined).
3. Chalk board, 16 lineal feet, pull down type (staff lined).
4. Tack board, 4 lineal feet.
5. Standard lighting treatment.
6. Standard window treatment.
7. Standard floor treatment.
8. Wall treatment should be acoustical.
9. Air-conditioning is recommended for the space, including storage space, especially for the protection of electronic equipment.
10. 200 square feet of open storage with access to storage through multiple wide double-opening cabinet doors.
11. Master control unit should be standard desk size with lockable top provided. When not in use, the console (closed) could be used as an instructor's lecture station.

Equipment and Furniture--Movable

1. 30 tablet armchairs, with swing-down arms for use at piano
2. 1 instructor's console chair
3. 24 electronic pianos mounted on dollies, with lockable wheels
4. 1 tape recorder
5. 1 record player
6. 1 metronome

Instrument Rehearsal Room

It is recommended that one room be provided. This space will require 3,000 square feet of assignable area and should be designed to accommodate 100 students. This space is intended to be used primarily for the teaching of instrumental music. Justification for a portion of this space will be the anticipated evening use for course offerings in adult general education.

Nature of Activities to be Housed

Typical student activities will include listening, questioning, playing musical instruments, sitting, and standing.

Typical professional activities will include explaining, listening to musical performances, directing musical performances, using chalk board, and demonstrating musical instrument techniques.

Equipment and Furniture--Built-in

1. Standard lighting treatment.
2. Minimum or no window treatment.
3. Air-conditioning recommended.
4. Four-level floor, main floor plus three permanent risers, back risers 8 feet wide, middle and front risers 4 feet wide.
5. Considerable storage should be provided in back of room for larger instruments.
6. Chalk board, staff lined, 16 lineal feet.
7. Chalk board, unlined, pull down type, 8 lineal feet.
8. Tack board, 8 lineal feet.
9. 2 front corner permanent-mounted stereo speakers.
10. Darkening capability and provision for audio-visual presentation.
11. Sound controlled to exterior and good interior acoustical treatment.
12. Sufficient front-of-room space for movable choral riser.
13. 2 access points to exterior room with standard door treatment.
14. 2 access points to instrument storage and uniform room; large doors are needed.

15. Coaxial conduit or conduit chase for educational television capability. (See explanation of RAMP requirements elsewhere in this Report.)
16. Convenience outlets along walls on 10-foot centers.

Equipment and Furniture--Movable

1. 100 chairs with fold-down arms (heavy-duty steel)
2. Musical stands
3. Piano with bench
4. Two 8 feet by 4 feet tables in lieu of desk
5. 1 director's podium
6. 1 director's chair (on podium)

Instrument Storage and Uniform Room

It is recommended that one room be provided. This space will require 480 square feet of assignable area. This space is intended to be used primarily for four purposes:

1. Musical instrument storage
2. Uniform storage
3. Minor musical instrument repair and maintenance
4. Occasionally as a dressing room

Nature of Activities to be Housed

Typical student activities will include storing musical instruments, hanging up uniforms, repairing and servicing musical instruments, washing and cleaning up, and changing clothes.

Typical professional activities will include storing, repairing and and servicing instruments, and washing and cleaning up.

Equipment and Furniture--Built-in

1. 2 sinks with mirrors above.
2. Three foot wide shelving on three foot spacing, 90 lineal feet.
3. Uniform storage (hanging type, with wide shelf above), 3 feet deep, 30 lineal feet.
4. Music repair area.
   a. Work counter, 8 lineal feet.
   b. Compressed air line.
5. 2 full-length mirrors.
6. Space dimensions should be long and narrow.
7. 2 access points to instrument ensemble room, large door treatment.

8. Standard lighting treatment.
9. Standard utility floor treatment.
10. Standard wall and ceiling treatment.

Equipment and Furniture--Movable

Hanging uniform storage racks for built-in uniform storage (see above). The racks should be mounted on castors.

Choral Rehearsal Room

It is recommended that one of these spaces be provided. This space will require 1,600 square feet of assignable area and should be designed to accommodate 100 students. This space is intended to be used primarily for the teaching of choral music. Additional justification of this space is the anticipated evening use for course offerings in adult general education.

Nature of Activities to be Housed

Typical student activities will include listening, questioning, singing, sitting and standing.

Typical professional activities will include explaining, listening to musical performances, directing musical performances, using chalk boards, and demonstrating musical techniques.

Equipment and Furniture--Built-in

1. Four-level floor, main floor plus three permanent risers; back riser 8 feet wide, middle and front riser 42 inches wide.
2. Chalk board, 16 lineal feet (staff lined).
3. Chalk board, 8 lineal feet, pull-down type (unlined).
4. Tack board, 8 lineal feet.
5. Generous lockable storage cabinet, shelves at rear for music.
6. Standard lighting treatment.
7. Minimum or no window treatment.
8. Air-conditioning recommended.
9. 2 front-corner permanent-mounted stereo speakers.
10. 2 access points to exterior room, standard door treatment.
11. 1 access point to choral storage room, standard door treatment.
12. Darkening capability and provision for audio-visual presentation.

13. Coaxial conduit or conduit chase for educational television capability. (See explanation of RAMP requirements elsewhere in this Report.)

14. Convenience outlets along walls on 10-foot centers.

Equipment and Furniture--Movable

1. 100 chairs with fold-down arms (heavy-duty steel)
2. 6-foot piano with bench
3. Director's podium
4. Director's chair (on podium)
5. Two 8 feet by 4 feet tables in lieu of desk

Choral Music Storage and Uniform Room

It is recommended that a one-room space be provided. This space will require approximately 200 square feet of assignable area. This space is intended to be used primarily for three purposes:

1. Music storage
2. Robe storage
3. Occasionally as a dressing room

Nature of Activities to be Housed

Typical student activities will include storing music, hanging up robes, washing and cleaning up, and changing clothes.

Typical professional activities will include storing music, locating music, and washing and cleaning up.

Equipment and Furniture--Built-in

1. Robe storage (hanging type, with wide shelf above), 3 feet deep, 15 lineal feet.
2. Sink, with mirror above.
3. 2 full-length mirrors.
4. Standard lighting treatment.
5. Standard utility floor treatment.
6. Standard wall and ceiling treatment.
7. Built-in wall cabinets with shelves, floor to ceiling, 10 lineal feet.
8. 1 access point to choral ensemble room, standard door treatment.

Equipment and Furniture--Movable

1. 8 legal five-drawer filing cabinets.
2. Hanging robe storage racks for built-in robe storage. Racks (see above) should be mounted on castors.

Choral Ensemble/Classroom

It is recommended that one room be provided. This space will require 520 square feet of assignable area and should be designed to accommodate 35 students. This space is intended to be used primarily for three purposes:

1. Teaching and rehearsal of small instrument ensembles.
2. Teaching and rehearsal of small choral ensembles.
3. Providing instruction (individual or small group) in "commercial music" (music arranging, small dance combo technique, etc.).

It should be recognized that the greater portion of the justification for this space will be its very heavy anticipated evening use of the activities in adult general education. This space can also be utilized as a general classroom.

Nature of Activities to be Housed

Typical student activities will include singing, playing musical instruments, listening, questioning, writing, note taking, using chalk boards, standing, and sitting.

Typical professional activities will include directing choral performances, directing instrument performances, explaining, discussing, using chalk boards, listening to choral performances, listening to instrument performances, sitting, and standing.

Equipment and Furniture--Built-in

1. Room aspect ratio--wider than long.
2. Chalk board, 16 lineal feet (staff lined).
3. Chalk board, 8 lineal feet, pull-down type (unlined).
4. Tack board, 4 lineal feet.
5. Standard lighting treatment.
6. Standard door treatment.
7. Acoustical treatment; floor, walls and ceiling.
8. Convenience outlets on 10-foot centers.
9. Darkening capability and provision for audio-visual presentation.

10. Coaxial conduit or conduit chase for educational television capability. (See explanation of RAMP requirements elsewhere in this Report.)

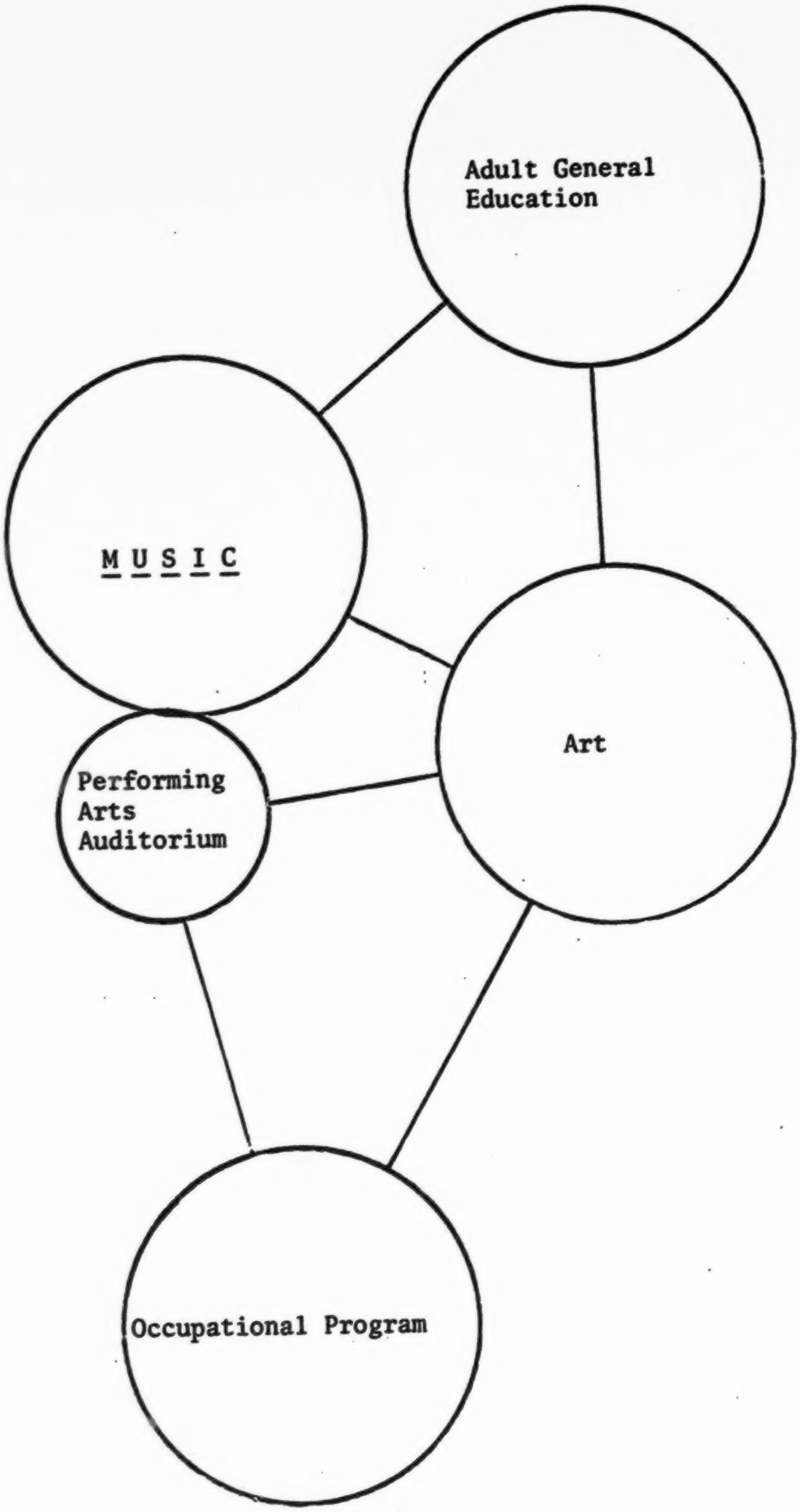
11. Minimum or no window treatment.

Equipment and Furniture--Movable

1. 35 tablet armchairs with fold-down arms
2. 25 music stands
3. Studio piano, with bench
4. 1 instructor's desk
5. 1 instructor's chair

Figure 12.1 is a diagram of the functional relationships of the music facilities with those of the non-music program.

Figure 12.1: Relationship of Music with Non-Music Program Areas



CHAPTER XIII

SPEECH AND DRAMA FACILITIES

Introduction

For the purpose of this educational programming, speech and drama are treated in this chapter. This is a grouping based on convenience rather than a grouping based on any commonality of function and service. Proper speech is an essential goal of any competent individual. Drama is the theatre and only selected individuals can become effective on the stage in the entertainment world. However, many individuals may profit personally from the experience of playing roles other than those they live from day to day.

For the purposes of this presentation, speech and drama will be treated separately.

Section I

Philosophy and Objectives of Speech

Speech is seldom singled out for emphasis in high school programs; therefore, a strong program in speech is needed in the College to improve the oral communication of all those individuals in the community who seek help in this area. It is believed that all men and women can profit from systematic and dedicated study of oral communication.

Speech services in the community college may include the following ten areas of study:

1. Practice and study of public speaking.
2. Practice and study of debate.
3. Practice and study of techniques of small group discussions.
4. Practice and study of oratory.
5. Practice and study of listening techniques.
6. Practice and study of voice projection and control.

7. Practice and study of radio and television speech.
8. Practice and study of interpretive reading.
9. Practice and study of rhetoric.
10. Practice and study of use of combined oral and visual presentations.

One of the central purposes of a speech department is to train people to think logically on a problem. It follows that the oral, or sometimes written, presentation of a problem should thus be logical and readily understood.

Sixty percent of all communication is orally executed. The demands of a society ever increasing in complexity would seem to demand of all people oral communication of a new excellence that may most nearly be achieved through systematic study of, and supervised practice in, speech.

The Educational Program

1. Public Speaking: The practice of speaking to a group both formally and informally. The student will, through reading and lecture, learn how to organize a speech and, through practice, will develop skill in presenting his thinking orally.
2. Debate: This program undertakes to train individuals to effectively present ideas and to develop a keen sense of audience response and a sharp, almost intuitive, sense of argument.
3. Small Group Discussions: This program undertakes to train individuals to participate effectively around a conference table in small group discussions. An alert sense of the leadership of the group through a leadership in ideas is a worthy concomitant goal and highly prized in today's intellectual climate.
4. Oratory: While this program is not as highly prized as once was the case, there is still a need for the individual who can affect the behavior of large numbers of people by addressing them in a formal situation.
5. Listening Techniques: With the mass media of radio, television, film tapes, and video tapes now accosting the individual, the skilled listener has become an essential ingredient of society. This skill is acquired through systematic study of, and practice in, listening.
6. Voice Training: This program is proposed to help students overcome voice deficiencies and to acquire new techniques in voice modulation and projection for everyday verbal communication.

7. Radio and Television: This program is designed to train and educate the student for speech work in radio and television.

8. Interpretive Reading: This program will be limited to a relatively few students who possess good dramatic speaking voices but who need training in the proper use of this talent.

9. Rhetoric: This course proposes to help the student in the proper use of correct and forceful spoken English.

10. Visual Presentations: The illustrated talk is an emerging tool in oral communication. The student in this program will study techniques of this kind of presentation and will then practice making these presentations.

Teaching Activities

Ten teachers will be needed in the speech area. Teachers of speech will generally work with small classes of 22 students. Speech clinics are essential where a teacher may work with one to six students or where students may record their voices and replay for their own criticism. Video tape presents students with an excellent opportunity for self-criticism. Emerging concepts in this area are representated by a collection of electronic recording and replaying devices, both sonic and visual. The devices need to be available in a series of clinics in the Speech Department.

There will be 500 students enrolled in the program. Student groups will meet in units of 22 during the day for 50-minute periods, and in units of 18 for double periods in evening classes.

Students will be pursuing college transfer work, vocational programs, and adult programs; motivation initially may be of a low level. Therefore, special architectural design attention is needed to identify this area to the student and to create an atmosphere of an important business center. Speech students need to make several presentations to groups of 75 to 150 people during their course work.

Instructional Aids, Equipment and Furniture

1. Rostrum--electrified
2. Tape recorder and amplifiers
3. Video tapes
4. Record players
5. TV camera and monitor

6. Audiometric testing equipment
7. Tablet armchairs in two (2) rooms
8. Tables and chairs in two (2) rooms
9. 12 linear feet of chalk board
10. 8 linear feet of cork board
11. Projection screen mounted to counteract keystoning
12. Television reception potential
13. Room darkening potential
14. 4 teachers' desks, 48 inches

Location

Speech is thought to relate to the entire student body rather than restricting its relationship to a single area. Therefore, the Speech Department should be integrated into all areas of the College. Because of the need to practice speaking before sizeable audiences (75 to 150), the small theatre, musical rehearsal, drama, and team-teaching facilities should be located conveniently to the speech classrooms.

Special Conditions

Sound control and reverberation time are critical. Rooms too heavily sound treated can distress the speakers; on the other hand, echo is unacceptable.

The classroom lighting shall conform to the brightness ratio recommended by the American Standards Association.

Room temperature control is indicated because rooms may be filled to capacity at times for speech presentations.

The speech area is a major unit of the College, so special design consideration must be given to it in order to meet peculiar needs of the Department.

Provisions for video tape production should be available, and provisions for replaying of tapes in classrooms and clinics is desirable. RAMP Central may serve this need.

Table 13.1: Space Considerations for Speech Requirements for the South Campus of Seattle Community College

Space[a]	Square Feet Per Unit	Total Square Feet
2 Classrooms	600	1,200
2 Speech Clinics (capacity 6) Adjacent to the Staff Offices	150	300
1 Audiometric Testing Laboratory	200	200
TOTAL		1,700

[a] Access to auditorium facilities with seating capacity for 75 or more persons should be provided.

Section II

DRAMA FACILITIES

Philosophy and Objectives of Drama

In broad general terms the College will attempt to provide the following educational programs:

1. Occupational education
2. Adult general education
3. Community service education
4. College parallel education

The drama program will provide theatre experience for enrollees in the occupational programs. Hopefully, it will give direction to drama programs supported by interested men and women in the Adult General Education Program. A certain number of students enrolled in the College will be active in drama and theatre because they will transfer to other degree-granting institutions.

Theatre productions will offer the College and provide the community the opportunity of enjoying the culture which results from a mature college drama program.

Interests and skills are better developed in a climate where students are taught in small groups and where community members are brought into the program in sundry ways such as acting in the capacity of an audience, critique writers, and sponsors of certain kinds of activities.

While it is not yet decided, serious consideration is underway regarding the possibility of training people for the technical theatre. This has serious implications for the kinds of facilities available to the Drama Department.

Curriculum

The curriculum for the College Parallel Program suggests that a student carry six quarters of his work in the drama theatre.

In the Adult General Program, students may participate in a short course of one semester duration in which they would begin to understand the construction of theatre and through this understanding develop more sympathy for the whole field of theatre art.

If the technical theatre develops in this area, it will mean occupational programs will be established ranging from one quarter to two full years of occupational work leading to the grade of proficiency just below that of the journeyman.

Courses taught will include:

History of Drama or the Theatre
Beginning Acting--Acting
Stagecraft--Stage Make-up
Play Production
Lighting
Technical Theatre (possible)

Two teachers will comprise the staff of the drama program at the outset; but if the program develops, it is reasonable to expect that this number may double in the years ahead.

The drama program is largely a program of laboratory exercises. Some academic work is essential, particularly for the transfer people in the field of theatre history and related areas. Students will build stage sets; they will perform simple to complex plays; and they will experiment with various and sundry techniques of lighting, of sound reproductions, and all the other elements related to contemporary theatre. It should be emphasized at the outset that a full program in this area will require extensive laboratory space. The proscenium theatre is still the basic organization for the presentation of drama; however, the emerging trends call for the thrust-type theatre and the theatre in the round. Because of this trilateral concept of theatre, special attention must be focused on trying to provide for as many of the three kinds of theatre activities as is practical within budget limitations. The order of their importance is listed above.

Student groups will range in size from a one-to-one teacher ratio to a ratio of 15 to 20 students per instructor. While most of the work is laboratory in nature, there must be some space provided for lecture groups of as many as 25 to 30 students. No characteristics of students are noted except the general run of those found in a community college in a metropolitan area.

Furniture and Equipment

The academic classroom will be equipped with 25 single tables and chairs, a teacher's desk, and a lectern.

Twelve feet of chalk board and 8 feet of bulletin board space shall be provided.

The room shall have television reception potential, an audio-visual screen designed to eliminate keystone effect, and a single storage cabinet for storing stage effects.

Scene Shop

Storage:

1. Lumber
2. Billboard--masonite, 4 feet by 8 feet plywood
3. Rolls of cloth
4. Cabinet for small supplies

In the measure and mark, cut, work-up shop the following tools are desirable:

1. Arbor saw
2. Saber saw
3. Mortiser
4. Jointer
5. Drill press
6. Router
7. Flat tables, 16 inches by 6 feet

In the paint shop the following items of equipment are desirable.

1. Heat dryer
2. Paint storage cabinet

3. Sink for paint and brushes
4. Drop and plate elevator lift
5. Brush racks
6. Color-corrected fluorescent lighting

In the costume shop the following equipment is needed:

1. 3 sewing machines
2. Washer and dryer
3. Cutting tables, 4 feet by 7 feet
4. Wardrobe racks
5. Ironing boards

Location

The drama teaching area should be located in close proximity to the Teaching and Fine Arts Auditorium because all stage settings and scenery will be developed in the drama teaching area and moved over to the theatre.

Special Conditions

The practice stage must be isolated sound wise from the stage craft shops.

The floor of the stage shall be of a soft wood, i.e., vertical grain fir.

The lighting in the stage practice area shall provide for a minimum of lighting variations.

Exits from the stage craft areas must be of sufficient size to expedite the movement of sets to and from the theatre.

Space Needs

The practice stage proscenium should have a stage depth of 35 feet, be 38 feet from the curtain, and have a 12 foot deep apron. Wings shall be wide enough to provide space for scenery storage, stage props, and for principals when not on stage as no green rooms are anticipated in this area. Table 13.2 lists the space needs for the facilities.

The classroom shall have approximately 600 square feet of usable space.

Minimum make-up and dressing rooms--2 at 200 square feet each.

Scene shop	1,500 square feet
Paint shop	1,500 square feet
Property and storage room	1,000 square feet
Costume shop	800 square feet

Table 13.2: Space Considerations for Drama Teaching Requirements for the South Campus of Seattle Community College

Type of Space	Student Stations	Size	Number of Units	Approximate Square Feet
Classroom	30	600	1	600
Make-up and Dressing Rooms	-	200	2	400
Practice Stage and Seating[a]	30	3,250	1	3,250
Scene Shop	-	1,500	1	1,500
Paint Shop	-	1,500	1	1,500
Property and Storage Room	-	1,000	1	1,000
Costume Shop	-	800	1	800
TOTAL				9,050

[a] Provide space for folding chairs around periphery of stage for seating.

CHAPTER XIV

ART FACILITIES

Philosophy and Objectives

The art curriculum should recognize the need which all individuals have for self expression and should encourage participation in art activities on as wide a basis as possible. Art exists everywhere in many forms and in many things. This area of the instructional program should play a vital role in the cultural activities of the individual, the College, and the community.

The art curriculum should seek to achieve the following basic objectives:

1. Provide courses and enrichment activities so that occupational students are given the opportunity to experience and participate in the areas of human endeavor that make life more meaningful and "worth living". Likewise, an attempt should be made to create an awareness of, and an interest in, occupational art and visual communications on the part of those who may wish to pursue art as a life's work.
2. Provide opportunities for the adult general education students to participate in art activities so that they may receive the intellectual stimulus to increase their knowledge of the world of art and, at the same time, provide opportunities for them to participate in meaningful activities that will challenge their creativeness.
3. Provide opportunities for the students who wish to transfer to a four-year institution to achieve the skills and knowledge essential to the successful completion of upper-division work. Courses for the art major are important to the attainment of the objective.
4. Provide a program of art that will play a vital part in the cultural activities of the community. The art curriculum has a responsibility to the community; and through community service activities such as lectures, exhibits, etc., it should extend the appreciation of art into the life of the community.

Art exists everywhere; and art facilities should include interior, semi-interior, and exterior spaces. Space for formal instruction must be provided. Likewise, ample space for exhibits and areas for reflection and inspiration must be provided. Art spaces must be designed to serve the old as well as the young. The art area could well serve as an inspirational focal point of the total campus. This is considered a high-visibility area.

Emerging Concepts

The artist has been called the "image maker". He creates images both visually and psychologically for new products, corporations, clubs, organizations and individuals. The developing power of the "image" has placed the artist who is creative in great demand. The expanded use of television and other media for the projection of images has increased the complexity and scope of course content for the art student. The use of new techniques involving more complex equipment, technical skills, and new media will be a part of the curriculum of "tomorrow". Art education will also have a greater responsibility to teach students how to evaluate the impact of "image" on themselves and society.

The arts have developed out of an inner human need. While most of the emphasis in human activity is on "team effort", the arts have become increasingly more individualistic. Self-expression and individual differences have never been more important in the arts than today. Individual solutions to problems are encouraged. The art curriculum should provide activities so that the individual can fulfill the need for self-expression and, at the same time, be a significant challenge to him. Art must somehow contribute to the individual's functional competence as a citizen who lives in a society that he understands and controls.

The Educational Program

Courses to be taught in the art curriculum include the traditional lower division art courses for college transfer, courses for adult general education, and survey-type courses for non-art majors.

A program of occupational/commercial art is being planned for the North Campus; therefore, no provision is being made for facilities for this area at the South Campus.

Course offerings in art are projected to include:

1. Survey Type

   Introduction to the Visual Arts
   Art in the 20th Century

2. Non-Survey

   Drawing
   Design
   Photography
   Commercial Design/Lettering
   Jewelry and Metal Work
   Printmaking
   Painting
   Ceramics
   Sculpture

Table 14.1: Summary of Art Spaces Needed for the South Campus of Seattle Community College

Type of Space	Number of Units	Approximate Total Space (Square Feet)
Drawing and Painting Laboratory, Including Storage	1	1,700
Design Laboratory	1	750
Ceramics Laboratory, Including Kiln and Glaze Rooms	1	800
Sculpture Laboratory	1	800
Three-Dimensional Art Laboratory	1	1,000
Darkroom	1	200
Printmaking Press Room	1	200
Patio-Art Garden	1	exterior
Art Student Locker Area	1 area	420
Art Faculty Offices	(a)	(a)
Evening Art Faculty Offices	(a)	(a)
Lecture/Audio-Visual Classroom	1	(a)
TOTAL INTERIOR SPACES COVERED BY THIS CHAPTER	10	5,870

(a) Requirements are included elsewhere in this Report.

Individual Space Requirements

The following types of space should be provided:

1. Drawing and Painting Laboratory
2. Design Laboratory
3. Ceramics Laboratory
4. Sculpture Laboratory
5. Three-Dimensional Art Laboratory
6. Darkroom
7. Printmaking Press Room
8. Art Student Locker Area

Drawing and Painting Laboratory

It is recommended that one of these spaces be provided. This space will require 1,700 square feet of assignable area and should be designed to accommodate 20 students. It is intended to be used primarily for the teaching of drawing and painting. It should be recognized that during the unscheduled portions of the day the space will be used by students for work on regular class projects and for practice and perfection of drawing and painting skills. A portion of the justification of this space will be its use for adult general education and its heavy anticipated evening use for course offerings in adult general education.

Typical student activities include painting; drawing; discussing; criticizing; preparing paints and other materials; washing and cleaning up tools, equipment and self; and sketching.

Typical professional activities include lecturing, leading discussions and criticizing, demonstrating techniques, demonstrating tools and materials, using blackboards, evaluating projects, and displaying projects.

The space recommended should include a storage room at one end of approximately 100 square feet. At the other end is another storage room of the same size. The open portion of the space will contain approximately 1,500 square feet. The space will be devoted to two major activities, drawing and painting. The two activities should be separable by a visual screen. At times, when one of the activities has a larger group using the laboratory than the other activity, the screen can be moved to provide more room for the larger group. One storage room will service painting, the other drawing.

Because of the dual use of this space, two doors should provide access to the space, one near one end of the space and one at the other.

Equipment and Furniture--Built-in

1. Movable and easily adjustable spotlighting should be provided for the space through the use of ceiling rails or tracks.
2. A wash down floor is needed for the space.
3. 2 sinks (with quick-clean plaster traps) with adjacent counter top should be provided at or near one end of the space.
4. 1 sink (with quick-clean plaster trap) with adjacent counter top should be provided at or near the other end.
5. Locked storage should be provided at or near the other end.
6. 20 linear feet of tack board/display board are needed.
7. 16 linear feet of chalk board should be provided.
8. Hanging rails should be provided on the ceiling for hanging projects and displays.
9. 50 linear feet of 18-inch shelving should be provided in each of the two storage rooms.
10. 2 entrance doors should be provided to the space.
11. Convenience outlets should be installed along walls on 10-foot centers.
12. Coaxial conduit or conduit chase for educational television capacity should be planned (see explanation of RAMP requirements elsewhere in this Report).

Equipment and Furniture--Movable

1. 20 art donkeys
2. 10 art stools
3. 25 art easels
4. Movable raised platform, 2 feet by 4 feet by 4 feet
5. 25 paint-pot and palette tables
6. 1 instructor's desk
7. 1 instructor's chair

Design Laboratory

It is recommended that one laboratory be provided. This space will require 750 square feet of assignable area and should be designed to accommodate 20 students.

This laboratory is intended to be used primarily for the teaching of design. It should be recognized that during unscheduled portions of the day the space will be used by students for work on regular class projects and for practice and perfection of skills and techniques of design. A portion of the justification for this space will be its anticipated evening use for course offerings in adult general education.

Typical student activities will include drawing; cutting; sketching; discussing; criticizing; preparing materials; washing and cleaning up tools, equipment and self; and printmaking.

Typical professional activities will include lecturing, leading discussions and criticizing, demonstrating techniques, demonstrating tools and materials, using blackboards, evaluating projects, and displaying projects.

Equipment and Furniture--Built-in

1. Standard floor treatment.
2. 2 large sinks for wash-up and material preparation with counter tops.
3. Locked storage under counter tops.
4. Color-corrected lighting.
5. 16 linear feet of tack board.
6. 8 linear feet of chalk board.
7. Standard wall treatment.
8. Hanging rails should be provided on the ceiling for hanging projects and displays.
9. Air-conditioning recommended.
10. Convenience outlets along walls on 10-foot centers.
11. Coaxial conduit or conduit chase for educational television capability. (See explanation of RAMP requirements elsewhere in this Report.)
12. Standard door.

Equipment and Furniture--Movable

1. 20 each, 3 feet by 4 feet design tables (drawing board portion of top tilts, 20 inch portion of top does not tilt).
2. 20 art stools.
3. 1 instructor's desk.
4. 1 instructor's chair.

Ceramics Laboratory

It is recommended that one laboratory be provided. This space will require 800 square feet of assignable area. This space should be designed to accommodate 15 students and is intended to be used primarily for the teaching of ceramics. It should be recognized that during unscheduled portions of the day the space will be used by students for work on regular class projects and for practice and perfection of skills and techniques in the art of ceramics. A large portion of the justification of this space will be its anticipated evening use of course offerings in adult general education.

Typical student activities include measuring material amounts; preparing materials for use; molding and sculpturing material; using potter's wheel; storing projects for cure; firing and glazing projects; criticizing; discussing; questioning; storing equipment; and washing and cleaning up tools, equipment and self.

Typical professional activities include lecturing, leading discussions and criticizing, demonstrating techniques, demonstrating use of tools and materials, using blackboards, evaluating projects, and issuing materials.

Equipment and Furniture--Built-in

1. 2 large sinks (with easy-clean plaster traps) with counter top work surface. Sinks should be washtub type.
2. Glazing counter, 10 linear feet in length.
3. Tack board, 4 linear feet.
4. Open shelves, 20 inches wide on 16 inch spacing, approximately 30 linear feet are needed.
5. Wash down wall treatment.
6. Wash down floor treatment, easy access drain pump.
7. Convenience outlets along walls on 6-foot centers.
8. Standard lighting treatment.
9. Standard door.

Equipment and Furniture--Movable

1. 10 potter's wheels
2. 2 each, 4 feet by 8 feet canvas-covered wedging tables
3. 100 cubic feet humid storage (2 cabinets)
4. 1 small electric kiln
5. 1 gas kiln (venting requirements)
6. Portable chalk board, 8 feet

Activity and equipment within the laboratory should include:

1. One area of approximately 600 square feet. Activities in this area will include mixing, wedging, shaping, sculpturing, displaying, criticizing, discussing and washing and cleaning up. Needed equipment for this area includes a sink, a potter's wheel, wedging tables, humid storage cabinets, chalk board, and a counter.
2. Another area of approximately 100 square feet. Activities in this area will include the preparation of glaze projects, and the temporary storage of projects awaiting the kiln. Equipment used will include sink, work counter, and storage shelves.
3. A third area of approximately 100 square feet. This is needed for such activities as firing projects and temporary storage of projects not fired. Equipment in this area will include kilns, storage shelves, etc.

Sculpture Laboratory

It is recommended that one laboratory be provided. This space will require 1,000 square feet of assignable area and should be designed to accommodate 20 students. This space is intended to be used primarily for the teaching of sculpture. It should be recognized that during unscheduled portions of the day the space will be used by students for work on regular class projects and for generally practicing and perfecting skills and techniques in the art of sculpturing. A portion of the justification of this space will be its anticipated evening use for course offerings in adult general education.

Typical student activities include hammering; chipping; chiseling; sawing; cutting; sanding; storing equipment; storing projects; preparing materials for use; displaying; criticizing; discussing; questioning; welding; casting; polishing; filing; and washing and cleaning up materials, tools and self.

Typical professional activities include lecturing, explaining, leading discussions, criticizing, demonstrating techniques, demonstrating tools and materials, using chalk boards, evaluating projects, and displaying projects.

Equipment and Furniture--Built-in

1. 2 sinks, washtub type (with quick-clean trap) with counter work surface.
2. Tack board, 8 linear feet.

3. Chalk board, 16 linear feet.
4. Wash down floor.
5. Standard interior door.
6. Double opening, double width, exterior door.
7. Skylight or high-entry light source recommended.
8. Locked wall storage cabinets for hand tools.
9. Welding booths (fixed or movable) for 3 torches.
10. Forced ventilation required for general high-level dust condition and for welding.
11. Large project floor display area.
12. Convenience outlets along walls on 8-foot centers.
13. Small project shelf display and/or display case.
14. Heavy-duty wall shelves for large project storage, 24 inch by 50 linear feet on 2-foot spacing.

Equipment and Furniture--Movable

1. 20 adjustable, movable sculpture pedestals.
2. 3 units, acetylene welding.
3. 20 art stools.
4. Saws, hammers, chisels, and a large assortment of other hand tools.

Three-Dimensional Art Laboratory

It is recommended that one laboratory be provided. This space will require 1,000 square feet of assignable area and should be designed to accommodate 24 students. This space is intended to be used primarily for the teaching of three-dimensional art--sometimes referred to as arts and crafts. The greater part of the justification for this space will be its very heavy use for course offerings in adult general education. It should be recognized that during unscheduled portions of the day the space will be used by students for work on regular class projects and for generally perfecting art skills.

Typical student activities include discussing; criticizing; questioning; bending; cutting; shaping; painting; firing; displaying projects; silver soldering; storing materials and tools; washing and cleaning up materials, tools and self; buffing; casting; enameling; and drilling.

Typical professional activities include lecturing, leading discussions, criticizing, demonstrating tools and use of materials, using chalk boards, evaluating projects, displaying projects, issuing materials and tools, and demonstrating of art techniques.

The three-dimensional art areas to be taught include jewelry design and construction, enameling, general metal crafts, and general wood crafts.

Equipment and Furniture--Built-in

1. 2 sinks (with easy-clean traps) with counter top which is acid resistant.
2. 75 linear feet of counter top along three walls.
    a. 35 linear feet of locked cupboard storage beneath.
    b. 30 linear feet of locked cupboard storage above.
    c. Convenience outlets above counter top on 4-foot centers.
    d. 2 corner units, bin storage beneath, 9 square feet each.
    e. 4 solder tanks in counter with asbestos top/firebricks.
3. Heavy-duty floor surface.
4. Standard lighting treatment.
5. Standard wall treatment.
6. Standard ceiling treatment.
7. Ventilating hood over sinks and solder tanks.

Equipment and Furniture--Movable

1. 3/8 inch band saw.
2. 4 small silver soldering torches.
3. 3 buffing wheels, pedestal mounted.
4. 1 grinding wheel, pedestal mounted.
5. 2 enameling ovens.
6. 12 bench vises.
7. 1 bench drill.
8. 1 broken-arm casting machine.
9. 2 five-drawer metal legal files.
10. Office bookcase.
11. Movable demonstration table with storage below, 2½ feet by 6 feet.
12. 4 hardwood work tables, 3 feet by 4 feet by 8 feet.

Darkroom

It is recommended that one unit be provided. This space will require 200 square feet of assignable area and is intended to be used primarily for two functions:

1. Printmaking/Photo-Silk Screening: Instruction will utilize four spaces. Discussions, lectures and some demonstrations will normally be scheduled in a general classroom. The design phase, including film cutting, film application, screen mounting, etc., will be normally scheduled for the design laboratory. Film development, washing, and drying will normally be scheduled for the darkroom. The production phase of instruction will normally be scheduled in the printmaking press room.
2. Photography: Instruction will utilize three spaces. Discussions, lectures and some demonstrations will normally be scheduled in a general classroom. The laboratory phase, including film and paper development, and washing and fixing, will be scheduled in the darkroom. The third phase, including film and paper drying and possibly paper mounting, will be scheduled in the printmaking press room. It should be recognized that during unscheduled portions of the day the space will be used by students for work on regular class projects and for generally perfecting darkroom skills. A large part of the justification for this space will be its use for course offerings in adult general education.

Typical student activities will include discussing, criticizing, mixing chemical preparations, cooling solutions, warming solutions, using enlargers, developing paper and film, washing paper and film, fixing paper and film, storing materials and solution, and washing equipment and self.

Typical professional activities will include explaining the use of materials, equipment and chemicals; demonstrating techniques; evaluating student use of equipment; issuing materials and chemicals; and storing materials.

Equipment and Furniture--Built-in

1. Approximately 40 linear feet of 2½ foot wide counter along the wall with acid-resistant top.
2. Approximately 10 linear feet of 3-foot open-tray sink which is accessible from all sides.
3. Convenience outlets on walls above counter on 4-foot centers.

4. 5 each hot and cold water taps suspended above center of open-tray sink.
5. Constant access light trap entrance to darkroom from printmaking press room.
6. Complete temperature control capability within space, air-conditioning required.
7. 4 linear feet of tack board.
8. Small lockable storage cabinets, 1½ feet deep, located beneath the counter.
9. Wash down floor with drain.
10. Wash down walls, finished flat white (not black).
11. In addition to the standard lighting treatment, switchable orange-filter lighting is needed.
12. No windows.
13. Large size lockable wall storage cabinet/shelves for paper storage.

Equipment and Furniture--Movable

1. Tumbler-type paper washer
2. 6 to 8 photographic enlarger
3. 30 to 40 assorted size paper trays
4. 10 assorted film developing tanks
5. 8 light-tight paper dispensers
6. 8 electric darkroom timers
7. 1 cabinet-type film dryer
8. 8 adjustable height metal stools

Printmaking Press Room

It is recommended that one space be provided. This space will require 200 square feet of assignable area and is intended to be used primarily in conjunction with the darkroom as an auxiliary space used in the teaching of printmaking/photo-silk screening, and in the teaching of photography. It should be recognized that during unscheduled portions of the day the space will be used by students for work on regular class projects and for generally perfecting printmaking and some photographic skills.

Typical student activities will include discussing; criticizing; using printmaking press; drying photographic films and paper; preparing materials and inks; and washing and cleaning up equipment, tools and self.

Typical professional activities will include explaining the use of materials and equipment, demonstrating techniques, evaluating student use of equipment, issuing materials and equipment, and storing materials and equipment.

Equipment and Furniture--Built-in

1. Sink and approximately 6 linear feet of counter top.
2. Lockable storage cabinet below counter top.
3. Printmaking press and etching press.
4. Large drum-type photographic paper dryer.
5. 20 linear feet of 16-inch wall shelving.
6. Standard lighting treatment.
7. Washable floor.
8. Standard wall treatment.
9. Standard door.
10. Constant access light trap entrance to darkroom from printmaking press room.
11. Convenience outlets along walls on 8-foot centers.
12. Forced air removal required for chemical fumes.

Equipment and Furniture--Movable

1. 4 feet by 8 feet marble-covered table
2. Drying racks for screen prints
3. Stretcher boards
4. Cutting table
5. 4 linear feet of tack board

Art Student Locker Area

It is recommended that one space be provided which will require 420 square feet of assignable area. This space is intended for use as an art supply, tools, and equipment storage area for student use. Because of the need that students have for storage in art programs, it is necessary to furnish student storage lockers. It is recommended that these student lockers be placed in one central location, apart from instructional rooms. This will allow students to utilize their lockers and have access to them at all times, without disrupting instructional meetings.

Typical student activities will include storing paints, brushes, paper projects, clay objects, metal objects, books, chemicals, sketch pads, etc.

Equipment and Furniture--Built-in

1. 50 storage lockers. Each locker to be divided by a shelf to form two spaces 2½ feet by 2½ feet by 2½ feet. Each locker is equipped with one door, lockable by padlock. Two students are serviced by each locker. Lockers should be stacked three high. A continuous heavy-duty shelf should be installed above the lockers for storage of materials which are too large for locker storage.
2. Standard lighting treatment.
3. No windows.
4. Humidity control for protection of art papers and supplies.

Movable equipment should include two large wastepaper disposal units.

Outdoor Patio/Art Garden

This space is intended for use primarily for the following:

1. As an aesthetically attractive outdoor instructional space.
2. As an area set aside at times for relaxation not only for art students and faculty but for all students and faculty.
3. As an area for display of outdoor art objects produced by students and faculty.
4. As a transition area or connecting area between the art facilities and other facilities on the campus.

Typical student activities will include painting, discussing, evaluating, thinking, smoking, listening, sketching, talking and explaining.

Typical professional activities will include painting, discussing, relaxing, evaluating, smoking, listening, sketching, talking and explaining.

Equipment and Furniture

1. Fountain
2. Reflection pool/s
3. Trees, grass, shrubs and walks
4. Outdoor benches
5. Outdoor paper disposal units
6. Outdoor cigarette disposal units

Art Faculty Offices

Because of the nature of art instruction and the need for constant availability of art faculty to unscheduled use of art laboratories, it is recommended that the art faculty offices be located directly adjacent to the specialized art facilities.

Other Art Spaces

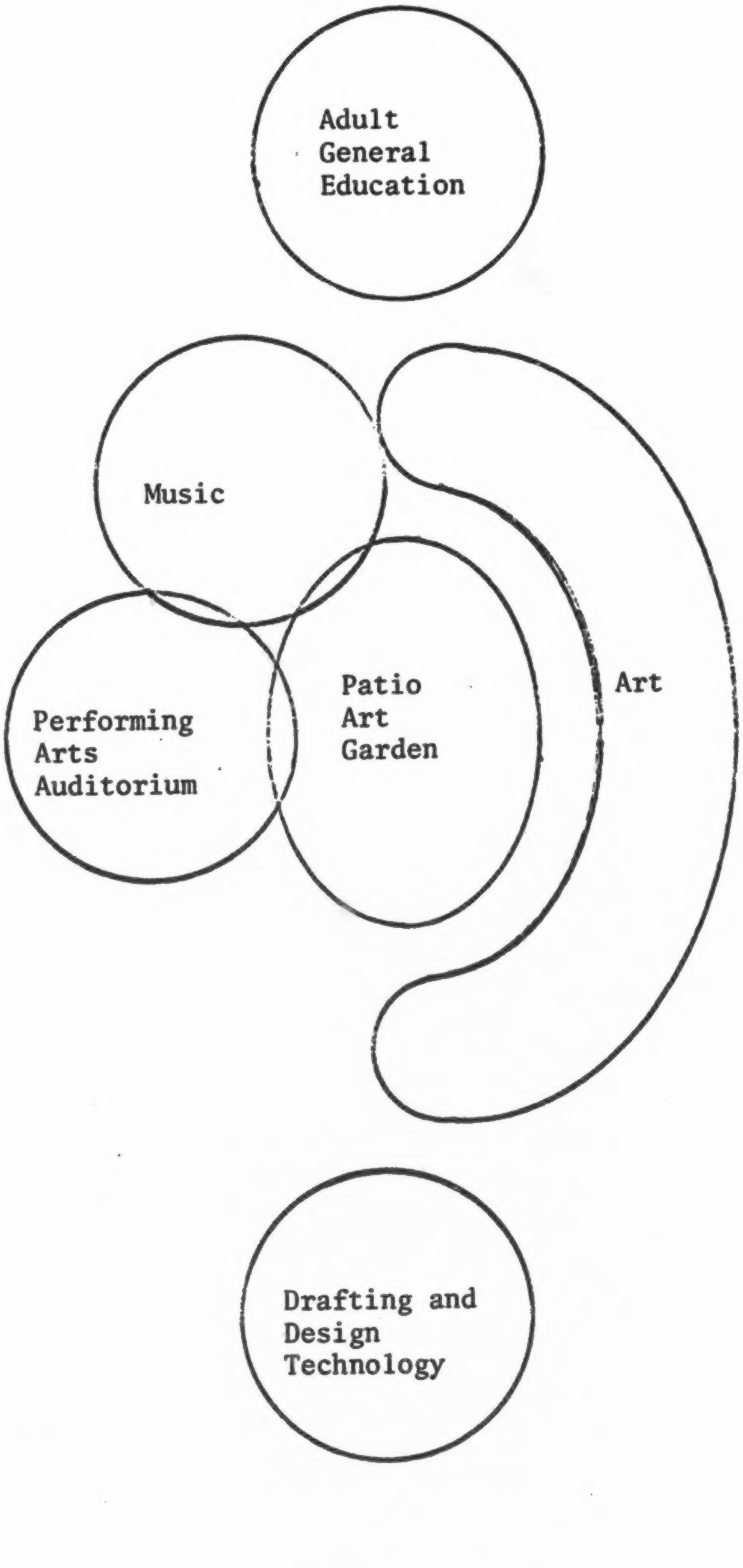
It is strongly recommended that many art exhibition areas and cabinets be located throughout the campus as a stimulation device for campus-wide interest in art.

General Considerations

Each quiet art area should be wired for sound transmission from a small control room in the art faculty office area (work or storage room). The purpose of this installation is to permit background music to be piped to the art laboratories.

Figure 14.1 shows the relationship of art with non-art program areas.

Figure 14.1: Relationship of Art with Non-Art Program Areas



CHAPTER XV

FACILITIES FOR THE ENGINEERING TECHNOLOGIES AND RELATED AREAS

Introduction

Several of the occupational curricula projected for the College are related to the engineering profession. These include Civil Engineering Technology, Mechanical Engineering Technology, Drafting and Design Technology, and Industrial Technology. Certain other areas in which the College will offer instruction are also either pre-professional or otherwise engineering-related. Because of their close relationship to professional engineering practice and to each other, these areas are being treated as a unit. It is suggested that the physical facilities of these programs be associated on the campus. Very valuable informal counseling can thereby result from such close physical relationship.

It is projected that College personnel will be involved in these programs to the extents indicated in Table 15.1. The numbers in the table come partially from estimates of the numbers of students and faculty members in the day programs made in the long-range planning study for the College[1], and partially from estimates of evening enrollment made by faculty members currently teaching in the programs.

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[1] Associated Consultants in Education, Inc., *Long Range Planning for Seattle Community College,* Tallahassee, Florida: ACE, 1966, pp. 129-35 (Preliminary Report Mimeo).

Table 15.1: College Personnel Associated with the Engineering Technologies and Related Areas for the South Campus of Seattle Community College

PROGRAM	DAY PROGRAMS Faculty	DAY PROGRAMS Students	OTHER PROGRAMS[a] Faculty[b]	OTHER PROGRAMS[a] Students[b]
Civil Engineering Technology	4	75	0	0
Drafting and Design Technology	10	180	3	60
Mechanical Engineering Technology	4	75	0	0
Industrial Engineering Technology	3	100	1	30
Pre-Engineering	3	150	0	0

[a] Includes Occupational Extension Education

[b] FTE

A summary of the suggested space needs for the engineering technologies and related areas is given in Table 15.2; details of these facility needs are given later in this chapter or elsewhere in this Report.

Table 15.2: Summary of Spaces Needed to Implement the Instructional Programs in the Engineering Technologies for the South Campus of Seattle Community College

Space Description	Number of Units	Approximate[a] Total Space (Square Feet)	Specialized[b] Space (Square Feet)
Auditorium/Lecture Theatre	1	3,800	(a)
General Purpose Classrooms	5	2,600	(a)
Seminar Rooms	9	2,520	(a)
Laboratory Areas	16	19,200	19,200
Administrative Offices	4	600	(a)
Reception Areas	4	480	(a)
Staff Offices	17	1,530	(a)
Evening Staff Offices	8	320	(a)
Toilet Areas	6	900	(a)
Student Study Lounges	2	480	480

Table 15.2 (Continued)

Space Description	Number of Units	Approximate[a] Total Space (Square Feet)	Specialized[b] Space (Square Feet)
Faculty Lounges	1	400	(a)
Faculty Workrooms	1	150	(a)
Student Locker Areas	1	400	400
Storage Supporting Instruction	4	800	800
Other (including general storage, custodial services, etc.)	8	720	(a)
TOTAL		34,900	20,800

(a)Requirements are included elsewhere in this Report.

[a] Data in this column includes some items described and accounted for elsewhere in this Report; these totals have been accumulated only for convenience.

[b] Spaces recommended to implement the instructional program described in this chapter.

The general relationships of the specialized spaces in this division are shown in Figure 15.1. Figure 15.2 shows the general relationship of these facilities to other facilities on the campus.

Technical and Other Semi-Professional Occupations

Philosophy and Objectives

The program of instruction in the engineering-related, semi-professional occupational areas will prepare highly-skilled technicians whose knowledge of the elements of mathematics and the physical and engineering sciences and whose specific training in various engineering technologies have equipped them to render important supporting services to professional engineers and scientists. The curricula will all lead to an Associate Degree, and will adhere as closely as possible to the recommendations of the professional agency responsible for accreditation of such programs.

While opportunities for all students exist in these areas, it is expected that the population enrolled in these programs will

Figure 15.1: General Relationships of Spaces for the Engineering Technologies and Related Areas

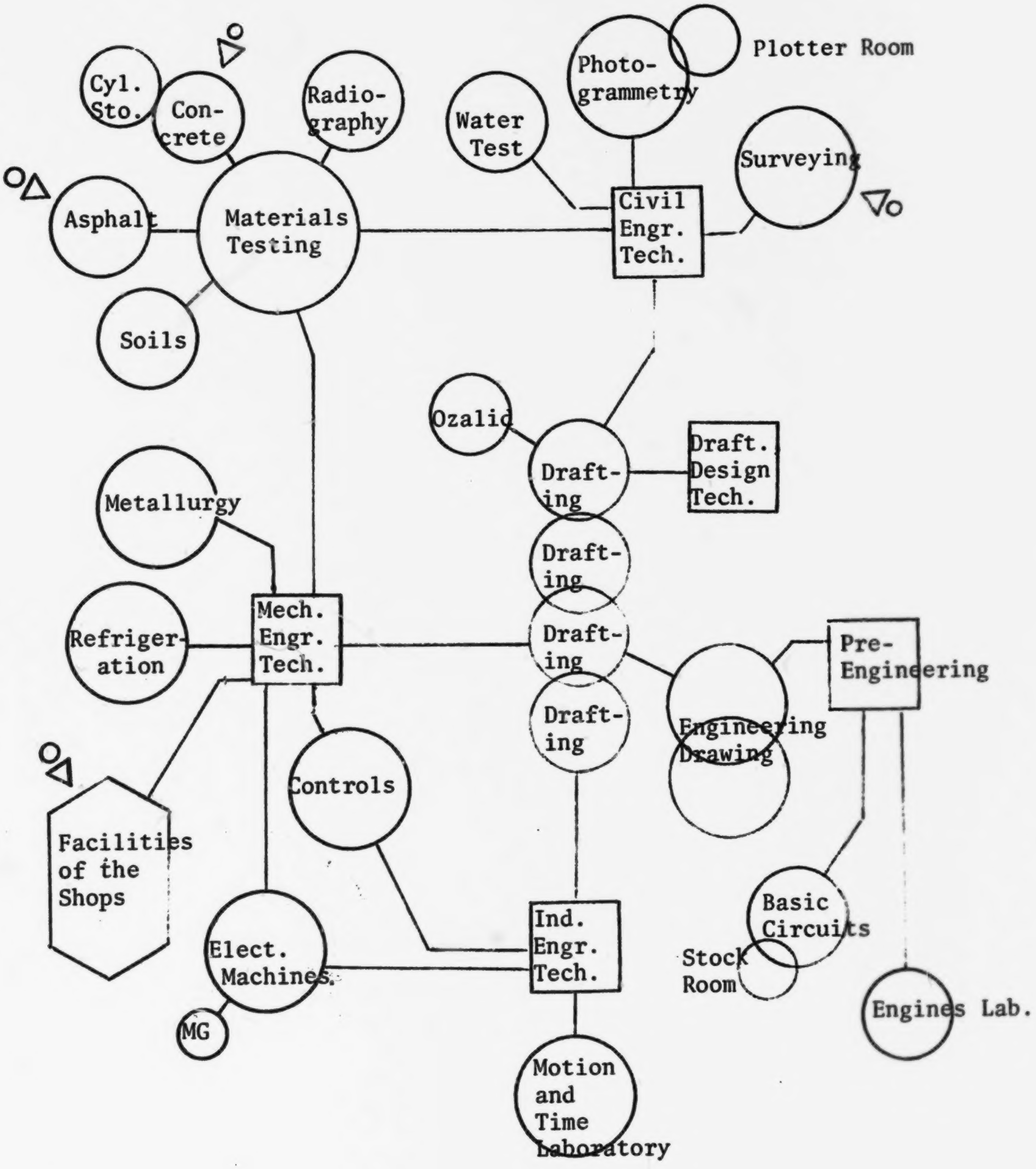
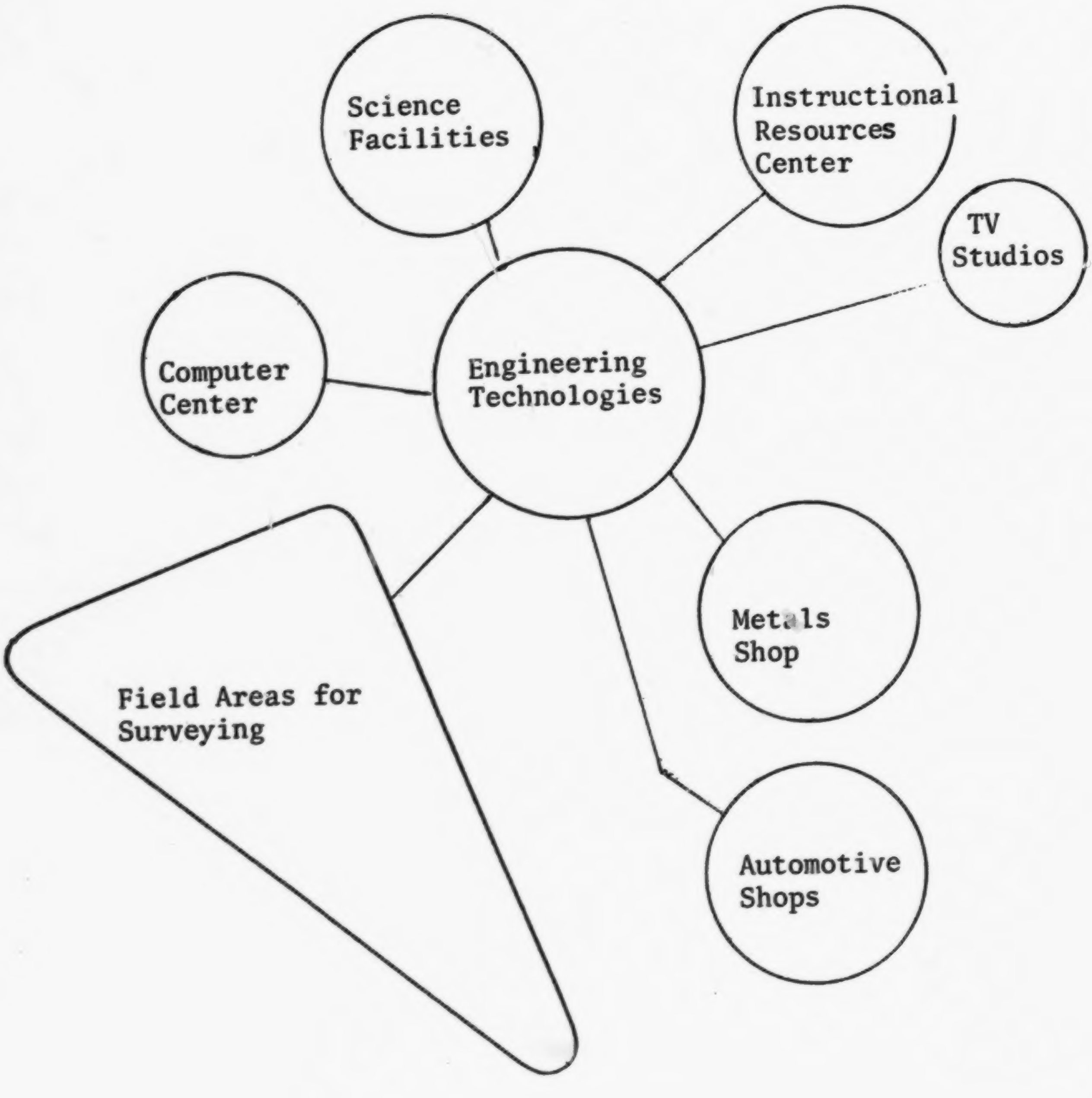


Figure 15.2: Relationships Between Facilities for the Engineering Technologies and Other Facilities on Campus



consist mainly of recent high school graduates who have high motivation and medium-high ability levels. These individuals are expected to attend as full-time students.

Curricula and Courses

1. Civil Engineering Technology
    a. Surveying Option
    b. Structure Option
    c. Highways Option
    d. Construction Option
2. Drafting and Design Technology
3. Mechanical Engineering Technology
    a. Metallurgy Option
    b. Air-Conditioning Option
4. Industrial Engineering Technology

The courses which appear in the above curricula include the following:

1. Elementary Surveying
2. Land Surveying
3. Topographic Surveying
4. Highway Surveying
5. Construction Materials
6. Elementary Drafting
7. Structural Drafting
8. Statics
9. Strength of Materials
10. Materials Testing
11. Soil Mechanics
12. Wood and Steel Structures
13. Concrete Structures
14. Construction Methods
15. Highway Design
16. Elementary Hydraulics
17. Water Supply and Treatment
18. Descriptive Geometry
19. Mapping
20. Photogrammetry
21. Architectural Drawing
22. Electrical Drawing
23. Production Illustration
24. Technical Sketching
25. Tool Detailing
26. Nomography
27. Machine Design
28. Metallurgy
29. Heat Treating
30. Welding Methods
31. Metals Machining
32. Thermodynamics
33. Refrigeration
34. Pneumatic, Hydraulic, Electric Control System
35. Industrial Safety
36. Inspection Methods
37. Production Supervision
38. Industrial Economics
39. Linear Programming
40. Statistics
41. Cost Control and Quality Control
42. Industrial Psychology
43. Motion and Time Study

Curricular areas which are closely related to these programs of study include the following:

1. Physics
2. Chemistry
3. Mathematics
4. Economics

5. Communications
6. Machine shop
7. Metals shop
8. Electric circuits
9. Electric machines

Teaching and Learning Activities

Teacher activities will include lecturing, answering questions, leading discussions, demonstrating devices and techniques, using visuals and audio-visuals, supervising student performance in laboratories and in the field, and preparing instructional materials. Student activities include listening to lectures; taking notes; participating in discussions; observing demonstrations, visuals and audio-visuals; conducting laboratory experiments; working on individual projects; and practice in the field.

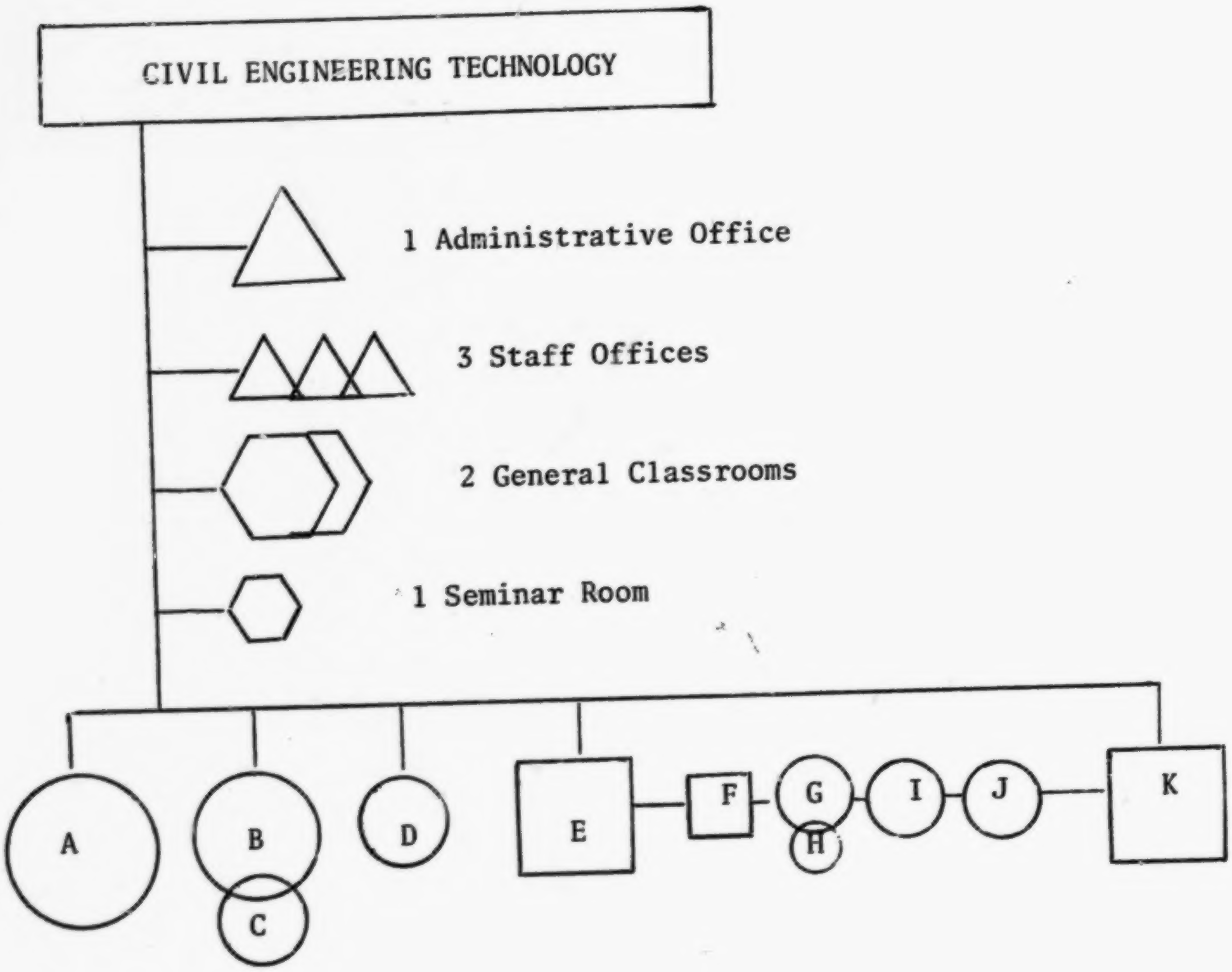
Student Groups

Class sizes are expected to be 20 students in all classes. The clientele is expected to be more homogeneous than in other divisions of the College; primarily, the students in these programs will be young men, recent high school graduates of relatively high mathematical ability and lower verbal skill with a high occupational orientation.

Space Components of the Instructional Program

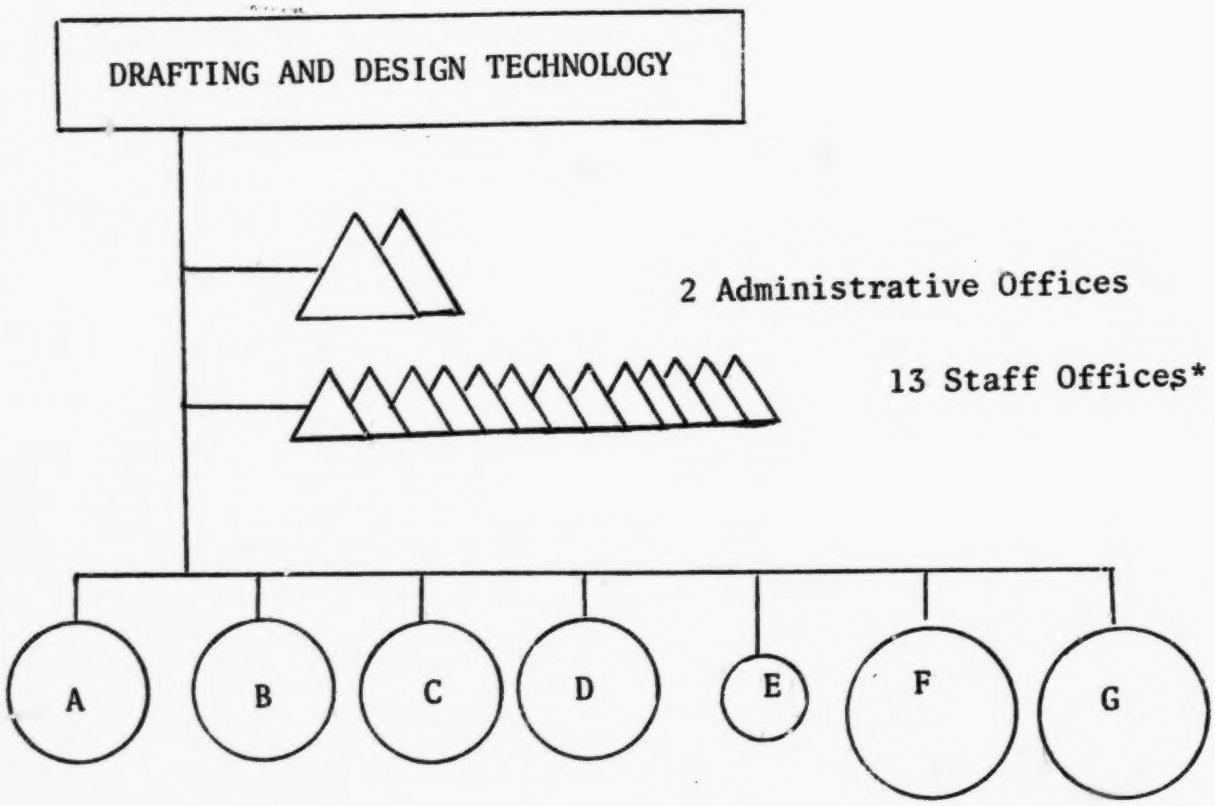
On the following pages are diagrams and tables which outline the number and kinds of spaces needed to implement the instructional program in these engineering technologies. Figure 15.3 and the associated table is related to spaces suggested for the Civil Engineering Technology curriculum. Figure 15.4 is related to Drafting and Design, Figure 15.5 is related to Mechanical Engineering Technology, and Figure 15.6 is related to Industrial Engineering Technology. Each figure and its associated table gives space suggestions for offices, classrooms and seminar rooms as well as for the specialized areas used primarily by students in the related program. Figure 15.7 shows the spaces needed to implement the instructional program in Pre-Engineering.

Figure 15.3: Spaces Needed to Implement the Instructional Program in Civil Engineering



A. Surveying Instruments and Lecture Room
B. Photogrammetry Laboratory
C. Plotter Room
D. Water Test Laboratory
E. Materials Testing Center
F. Radiographic Testing
G. Concrete Cylinder Preparation Laboratory
H. Cylinder Curing and Storage Room
I. Asphaltic Materials Testing Laboratory
J. Soils Testing Laboratory
K. Drafting Room

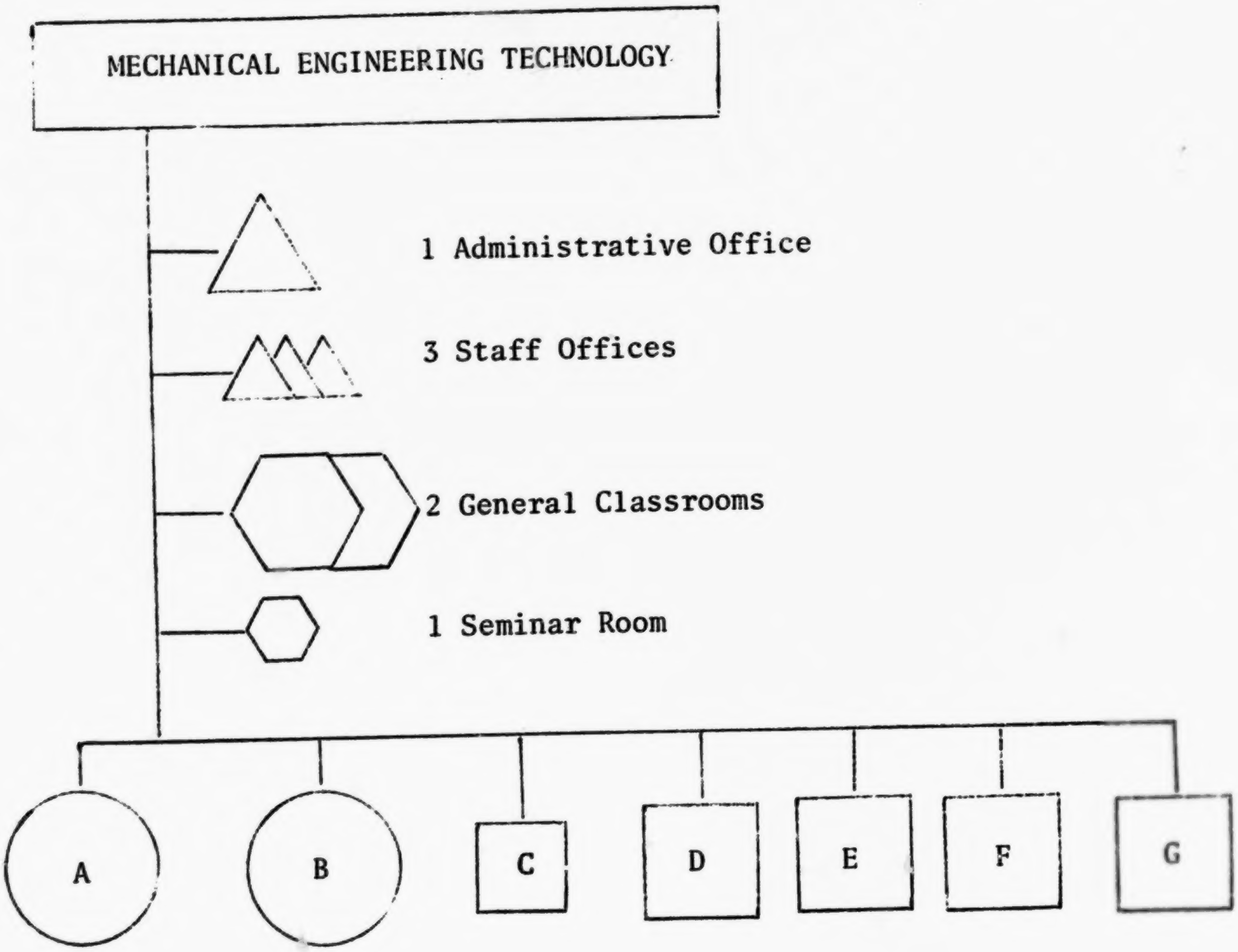
Figure 15.4: Spaces Needed to Implement the Instructional Program in Drafting and Design Technology



*Includes College Parallel Engineering Drawing

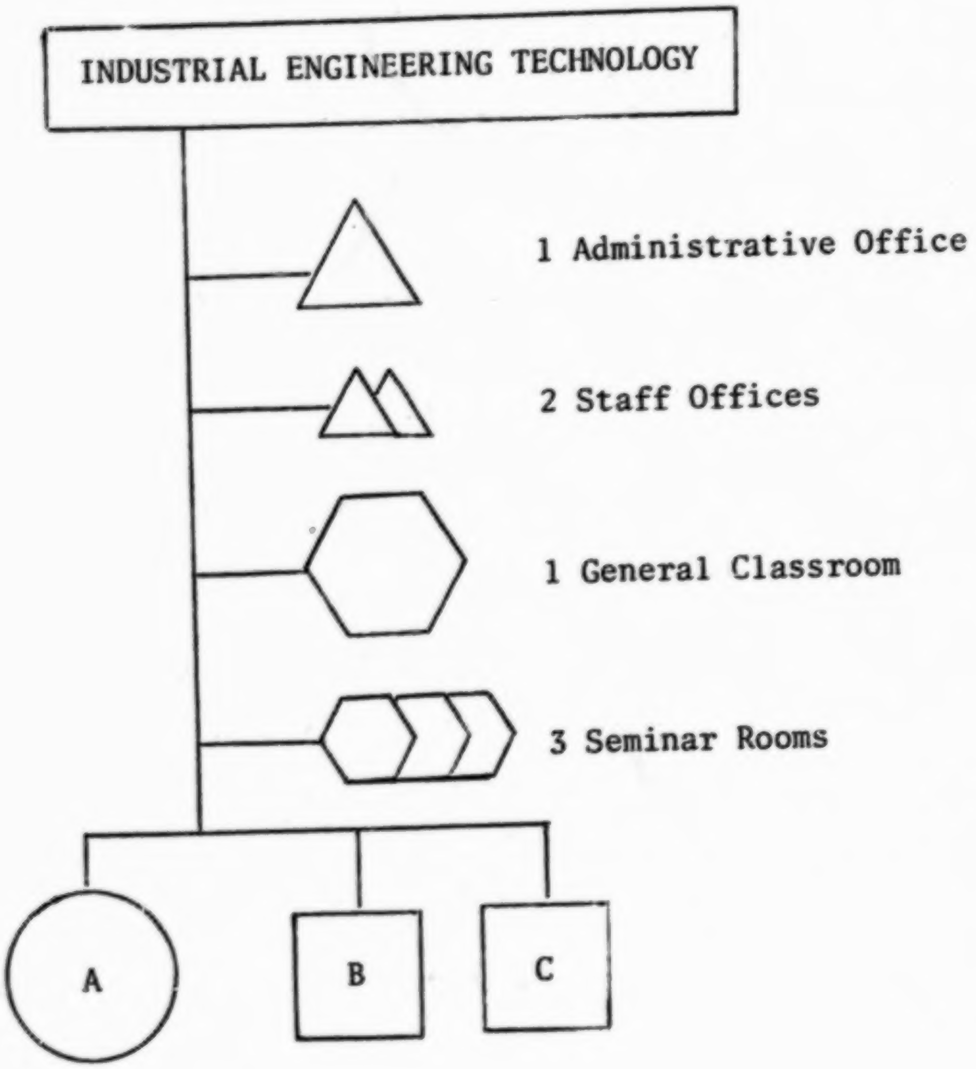
A. Drafting Laboratory
B. Drafting Laboratory
C. Drafting Laboratory
D. Drafting Laboratory
E. Ozalid Room
F. Drawing Laboratory
G. Drawing Laboratory

Figure 15.5: Spaces Needed to Implement the Instructional Program in Mechanical Engineering Technology



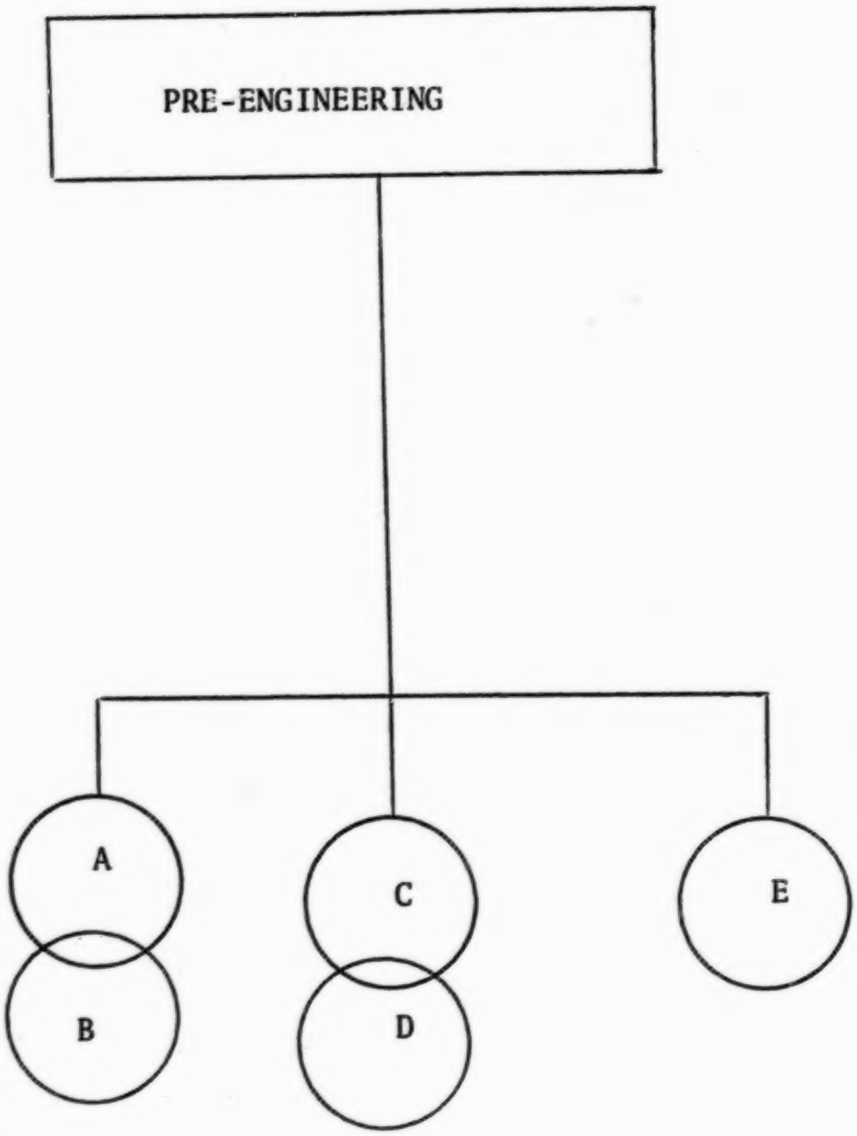
A. Metallurgy Laboratories
B. Refrigeration Laboratory
C. Controls and Servomechanisms (Shared with IET)
D. Shops (Shared with related diploma areas)
E. Materials Testing Center (Shared with IET)
F. Drafting Laboratory (Shared with D and DT)
G. Electrical Machines Laboratory (Shared with IET)

Figure 15.6: Spaces Needed to Implement the Instructional Program in Industrial Engineering Technology



A. Motion and Time Study Laboratory
B. Drafting Laboratory (Shared with D and DT)
C. Shops (Shared with diploma programs)

Figure 15.7: Spaces Needed to Implement the Instructional Program in Pre-Engineering



A. Engineering Drawing Laboratory

B. Engineering Drawing Laboratory

C. Basic Circuits Laboratory

D. Storage

E. Internal Combustion Engines Laboratory

Table 15.3: Comments on Space Characteristics for Civil Engineering Technology for the South Campus of Seattle Community College

A. Surveying Instruments and Lecture Room

Approximate Area:	600 square feet
Student Stations:	20
Usage:	All surveying classes, including elementary surveying, topographic surveying, route surveying, land surveying, etc.
Furniture and Equipment:	40 instrument lockers; storage for plane tables, rods, poles, and stakes; chalk board; overhead projector; 20 tablet armchairs; instructor's station; and table for instrument cleaning and repair.
Remarks:	Room must have access to outdoors; must allow for in-room instrument setup.

B. Photogrammetry Laboratory

Approximate Area:	450 square feet
Student Stations:	10/20 (10 work stations; students may work in pairs)
Usage:	Photogrammetry, mapping and route surveying.
Furniture and Equipment:	Optical devices for study of aerial photographs, drafting tables, one 4 feet by 8 feet table, and student stools.
Remarks:	Light control with access to Plotter Room and to a drafting laboratory.

C. Plotter Room

Approximate Area:	150 square feet
Usage:	To house plotter for aerial photographs.
Furniture and Equipment:	1 plotter with table; in-room storage for maps.
Remarks:	Black out, access to Photogrammetry Laboratory, and warning system for "in-use" condition.

Table 15.3 (Continued)

D. Water Test Laboratory

Approximate Area: 400 square feet

Student Stations: 10/20 (10 work stations; students may work in pairs)

Usage: Laboratory for water treatment classes.

Furniture and Equipment: Chemistry laboratory furniture, chalk board, and cork board.

Remarks: Access to Soils Testing Laboratory is desirable, utilities include water, gas and 110V AC service.

E. Materials Testing Center

Approximate Area: 900 square feet

Student Stations: 30

Usage: Materials testing, strength of materials laboratory. This facility is shared with other departments.

Furniture and Equipment: 2 universal testing machines, torsion tester, hardness testers, impact tester, creep and fatigue testers, pen recorders, motion picture camera, sample storage, instrument storage, 30 student chairs, chalk board, cork board, and overhead projector.

Remarks: Facility should have high-visibility, minimum door opening is 5 feet, heavy floor load, and isolated floor section for impact machine. This is a "high-visibility" area.

F. Radiographic Testing Laboratory

Approximate Area: 200 square feet

Usage: Non-destructive testing for Civil, Mechanical and Industrial Technologies

Furniture and Equipment: X-ray machine, fluoroscope, gamma radiation facility, chalk board, and cork board.

Table 15.3 (Continued

Remarks:	Room shielded with lead or high density concrete, access to Metallurgy Laboratory, access to Materials Testing Center, lead glass view port, and "in-use" warning system.

G. Concrete Cylinder Preparation Laboratory

Approximate Area:	600 square feet
Student Stations:	10/20 (students will work in teams of 2 to 5)
Furniture and Equipment:	Aggregate storage bins, cement storage, mixing troughs, small mixer (2 cubic feet), storage for cylinder molds, storage for mixing tools, water and hose connections, chalk board, compressed air, and negative increment weighing scales on aggregate bins.
Remarks:	Strive for innovations in aggregate storage by use of elevated bins and negative increment scales on bins. Ramp for delivery of materials must be raised. This is a "dirty" area and should be removed from "clean" areas. Floor must be easily cleanable.

H. Cylinder Curing and Storage Room

Approximate Area:	100 square feet
Usage:	Curing and storing concrete test cylinders.
Remarks:	Temperature and humidity control, with recorded environmental conditions; access to Concrete Cylinder Preparation Laboratory; non-rusting perforated shelving; and internal air circulation.

I. Asphaltic Materials Testing Laboratory

Approximate Area:	400 square feet
Student Stations:	10/20 (5 work stations, students work in teams of 2 to 4)

Table 15.3 (Continued

Furniture and Equipment: Chemistry laboratory furniture, chalk board, cork board, in-room storage, fume hood, and exhaust system.

Remarks: Cleanable floor, grease- and tar-resistant surfaces. Flammable organic materials require special storage, special fire safety equipment, and delivery access (including ramp).

J. Soils Testing Laboratory

Approximate Area: 400 square feet

Student Stations: 10/20 (10 work stations, students may work in pairs)

Furniture and Equipment: Continuous table surface around walls with cabinet storage under and over, counter island in room center with sinks and table surface, chalk board, cork board, and drying ovens.

Remarks: This is a "dirty" area and should not be contiguous to an area containing precision equipment. May be adjacent to Concrete Cylinder Preparation Laboratory.

K. Drafting Rooms (See Chapter on Drafting and Design Technology)

Table 15.4: Comments on Space Characteristics for Drafting and Design Technology for the South Campus of Seattle Community College

A., B., C. and D. Drafting Laboratories

Approximate Area: 1,250 square feet each

Student Stations: 20 each

Usage: Drafting

Furniture and Equipment: Twenty 3 feet by 5 feet tables, fitted with parallel rules in 2 laboratories; drafting machines in 2; stools; chalk board; cork board; instructor's station; in-room TV use; and 4 feet by 16 feet counter at rear of rooms.

Table 15.4 (Continued)

Remarks:	80 footcandles of color-corrected illumination, double door entry. These are "high-visibility" areas.

E. Ozalid Room

Approximate Area:	200 square feet
Usage:	Service to drafting and other instructional units.
Remarks:	5-foot entry, exhaust systems for ammonia fumes, chemical and paper storage, and access to drafting and drawing areas.

F. and G. Engineering Drawing Laboratory

Approximate Area:	1,600 square feet each
Student Stations:	30 each
Usage:	Drawing for pre-engineering, occupational extension, and overflow from drafting and design.
Furniture and Equipment:	Thirty 3 feet by 5 feet tables fitted with parallel rules, stools, chalk board, cork board, instructor's station, in-room TV system, in-room storage, and 4 feet by 16 feet counter along rear of room.
Remarks:	80 footcandles of color-corrected illumination, double door entry.

Table 15.5: Comments on Space Characteristics for Mechanical Engineering Technology for the South Campus of Seattle Community College

A. Metallurgy Laboratories

Approximate Area:	200 square feet for grinding and polishing room, 350 square feet for microscope room, and 50 square feet for storage (total, 600 square feet)

Table 15.5 (Continued)

Student Stations:	10/20 (10 working stations in microscope room, 5 polishing wheels)
Usage:	Laboratory for metallurgy, occasional use by heat treating classes, and occasional use by science classes.
Furniture and Equipment:	Continuous surface counters around walls of microscope room, stools, 10 microscopes, 1 projection microscope with camera attachment, 5 polishing wheels, 1 grinder, sinks and water taps, and electrical service outlets around walls of microscope room.
Remarks:	Light control in microscope room.

B. Refrigeration Laboratory

Approximate Area:	1,000 square feet
Student Stations:	20
Usage:	Laboratory for refrigeration and thermodynamics. Also used by Diploma programs in automotive technology.
Furniture and Equipment:	10 compressors and 10 condensers, one set of which is a mobile unit; 2 heat pumps; ducts; heat exchangers; cooling tower outside laboratory; student stools; chalk board; cork board; water, gas, air and electric service to tables; overhead projector; and storage for tools and fittings.
Remarks:	This is essentially a "noisy" and "dirty" area. It should not be in close proximity to rooms with quiet activities.

C. Controls and Servomechanisms

Approximate Area:	900 square feet
Student Stations:	20
Usage:	Controls and automation laboratories for several engineering technology programs.

Table 15.5 (Continued)

Furniture and Equipment:	Continuous surface counters around periphery of room, air and electric service at counter, in-room storage for apparatus, center counter island with sinks, chalk board, cork board, overhead projector, and 10 electronic panels on counter.

D. Shops (See chapter on Metal Fabrication, Machining, and Related Occupations)

E. Materials Testing Center (See chapter on Civil Engineering Technology)

F. Drafting Laboratory (See chapter on Drafting and Design Technology)

G. Electrical Machines Laboratory

Set of equipment for power supply with remote motor generator

Approximate Area:	1,000 square feet (100 square feet for motor generator)
Student Stations:	20
Usage:	Electrical machines laboratory; power transmission and utilization; and characteristics of motors, generators, transformers and related equipment. This is a shared facility.
Furniture and Equipment:	In-room equipment consisting of motors, generators, transformers, portable loads and dynamometers; tables and student chairs; counters at one wall for test apparatus; master patch panel; patch panel at each machine; and remote motor generator set with sound suppression.
Remarks:	110V, 220V, 440V, AC 1Ø and 3Ø delivered to laboratory; master panel required, minimum of 5-foot access space behind panel; troughs for wiring (or overhead service); incandescent lighting with 60 footcandles at floor level; rigid mounting for motors and generators; and master switch for room. This is a "high-visibility" area.

Table 15.6: Comments on Space Characteristics for Industrial Engineering Technology for the South Campus of Seattle Community College

A. Motion and Time Study Laboratory

Approximate Area: 600 square feet

Student Stations: 20

Usage: Laboratory for Industrial Technology.

Furniture and Equipment: Counters around periphery of room; over-counter storage for motion and time cameras and projectors; student stools; RAMP services; in-room storage for stopwatches, clipboards, etc.; five 3 feet by 5 feet tables in center of room with chairs; chalk board; and cork board.

Remarks: Electric service at counters; black out capacity.

B. Drafting Laboratory (See chapter on Drafting and Design Technology

C. Shops (See chapter on Metal Fabrication and Related Occupations)

College Parallel Courses in Pre-Engineering

Those students in the College Parallel Program who are planning to transfer to senior institutions and follow an engineering curriculum will occupy some of the facilities devoted to the engineering technologies and related areas. Courses such as Engineering Drawing, Engineering Problems, Orientation to Engineering, Internal Combustion Engines, and Basic Electronics will be taught to these college parallel students in the same facilities as are used for teaching similar subjects to occupational students. Not only does such a policy effectively utilize spaces on campus, avoiding duplication of facilities in two locations, but it also is philosophically a sound procedure. The association of the spaces devoted to instruction in engineering technology and pre-engineering will provide a valuable informal counseling technique for both groups of students.

Office spaces for the faculty members involved with the instructional program for pre-engineering students should also be located in this same facility.

Adequate allowance for the college parallel courses has been made in the educational specifications given in this chapter.

Table 15.7: Comments on Space Characteristics for Pre-Engineering for the South Campus of Seattle Community College

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A. and B. Engineering Drawing Laboratory (See Drafting and Design Technology)

C. Basic Circuits Laboratory

Approximate Area:	1,100 square feet
Student Stations:	30
Usage:	DC and AC circuit fundamentals, introductory courses in electron tubes and transistors, and basic electronics circuits.
Furniture and Equipment:	Chalk board, storage space for small parts and equipment, "stand-up" work stations for students, safety electrical outlets, student stools, display areas (including cork board and map rails along walls), provision for built-in meters, and plug mold along bench tops.
Remarks:	Aisle space sufficient for carts, access to stockroom, air-conditioning with humidity control, 60 footcandles for illumination at desk level, proximity to locker areas, 3Ø, 4 wire 110V AC, 0-130V DC, 10 a. regulated. 400 cycles 3Ø and 1Ø, shielded audio circuit, independent ground and master switch for area.

D. Storeroom

Approximate Area:	200 square feet
Usage:	Storage of meters, power supplies, instruments, oscilloscopes, parts, etc.

Table 15.7 (Continued)

Furniture and Equipment:	Shelving, drawers and bins.
Remarks:	Dutch door at check-out counter, proximity to laboratory.

E. Internal Combustion Engines Laboratory

Approximate Area:	1,200 square feet
Student Stations:	30
Usage:	Supporting instruction for pre-engineering students and introductory courses for Mechanical, Industrial, Drafting and Civil Engineering students.
Furniture and Equipment:	Test stands for small engines, student tables and stools, in-room ventilation and exhaust system, dynamometer, timing analyzer, benches for "tear-down", and test instruments for electrical and mechanical systems.
Remarks:	Provide exhaust systems and noise suppression. Demand will exist for older students to return to college for educational experiences such as those provided in this laboratory.

CHAPTER XVI

FACILITIES FOR THE SCIENCE CENTER

Philosophy and Objectives

The science curriculum of the College should recognize the widespread influence that science has on our social, political and economic life, as well as the accelerated rate at which scientific knowledge is accumulating. The need for all citizens to have a background with an understanding of the physical and biological sciences to participate intelligently in American society is apparent. A basic objective of the science curriculum is to serve this need.

The facilities provided should be the kind that will attract the non-scientist. Science in the community college will always be quantitatively more concerned with the non-science major, even though the science major will spend more time in the science facilities.

A second basic objective of the science curriculum is to provide instruction in the traditional lower-division science courses for college transfer. The college parallel courses should have the rigor of the traditional college-level science course.

The community college program serves students who seek competencies in an occupation which may require approximately two years of formal education. The science curriculum should provide the service courses needed to meet the needs of students in the Occupational Program.

Many adults, for one reason or another, have failed to acquire a high school education and now seek to attain this objective. The science curriculum of the College should provide the service courses and the content to fulfill the needs of adults seeking a high school diploma.

Curricula and Courses

The courses offered will include:

1. Survey-type courses in six science fields and perhaps a seventh are as follows:
    - a. Physics
    - b. Biology
    - c. Chemistry
    - d. Geology
    - e. Astronomy
    - f. Oceanography
    - g. Physical Science
2. In addition to the survey courses, the offerings will include:
    - a. Physics
    - b. Biology
    - c. Chemistry
    - d. Botany
    - e. Geology
    - f. Zoology

All courses would provide some laboratory experiences with more laboratory time provided for the more rigorous courses for science majors. Courses for chemistry majors would require as much as 2 three-hour laboratories per week. Time in laboratories for physics and biology majors would be four hours per week, perhaps 2 two-hour laboratory periods.

Teaching and Learning Activities

Teaching activities will include the following:

1. Demonstrations
2. Lectures
3. Discussions
4. Individual student instruction
5. Presenting visuals
6. Preparing set-ups for experiments and demonstrations
7. Programmed instruction
8. Use of audio tapes

Student activities will include:

1. Observing demonstrations
2. Participating in experimentation and analysis
3. Measurement
4. Participating in discussions
5. Taking notes
6. Watching visual presentations
7. Listening to lectures
8. Viewing microscopes
9. Dissecting animals
10. Using programmed learning materials
11. Observing live specimens

Lectures outside of the laboratory will be conducted for large class groups including several sections of the same course at the same time.

Some emerging concepts of significance in science instruction are: (1) the use of programmed instruction for individual study in selected courses, and (2) the integrated approach to instruction in some reorganized science curriculums. Programmed materials are being used to teach the language and technique of science in both general and organic chemistry. Likewise, this approach could perhaps be extended to other science curriculums in the future.

Future curriculum changes could bring about a more integrated approach to science instruction. Curriculum content would be organized differently than the traditional approach. A significant development is the increasing interdependence of the disciplines--physics, chemistry and biology. For example, one new approach to the teaching of biology is from a physical energy standpoint. Consequently, biology students would use equipment common to the teaching of physics to learn this concept. Similarly, a student may be involved in the use of chemistry equipment and materials in a related biology course. Therefore, teaching a single science course in the future would require the use of facilities now found in all types of science laboratories.

The implications of these trends are: (1) that some provision must be made for the use of programmed materials in science instructional areas, and (2) that science laboratories should be planned not only to serve a special course need but also to permit their interchangeable use among the various science courses.

Furthermore, because of the rapid acceleration in the accumulation of knowledge in science, all facilities must be planned with as much vision and foresightedness as current educational patterns will permit. The process of inquiry may change little, but the tools of inquiry will change drastically. The traditional patterns of grouping students are also subject to a drastic change. For these reasons, the hardware of instruction must be capable of complete interchangeability and replacement with relative ease. Ideally, the development of a laboratory properly equipped to serve all the science disciplines rather than separate laboratories for each would be a giant step toward solving the problem of changing interdisiplinary relationships. However, it must be reiterated that current patterns of instruction must be properly served.

Student Groups

Size of laboratory sections should not exceed 32 students. A desirable class size should not exceed 24. Large lecture groups will include several sections of the same course. Laboratory planning should provide student station capacities for 32 students. Large science lecture rooms should provide capacities for approximately 130 students.

In most laboratory situations, students will work individually or in groups of two. The students in qualitative, quantitative and organic chemistry courses will work four students per table. In other chemistry courses, tables for eight students are satisfactory.

Number and Types of Spaces Needed

The following list includes the number, type and approximate size of laboratories and auxiliary spaces needed:

1.	2 General biology laboratories	@ 1,000	2,000
2.	2 General biology preparation and workrooms	@ 300	600
3.	1 Zoology laboratory		1,000
4.	1 Zoology preparation area		350
5.	1 Botany laboratory		1,200
6.	1 Botany preparation and storage area		350
7.	1 Physiology and anatomy laboratory		1,200
8.	1 Physiology and anatomy preparation area		300
9.	1 Animal area		200
10.	1 Specimen area		200
11.	1 General storage		800
12.	1 Greenhouse		800
13.	2 General chemistry	@ 1,200	2,400
14.	2 Balance spaces for general chemistry	@ 150	300
15.	3 Preparation areas for general chemistry	@ 200	600
16.	1 Qualitative analysis laboratory		1,200

17.	1 Quantitative and organic laboratory		1,200
18.	1 Organic preparation area		150
19.	1 Quantitative analysis preparation area		150
20.	1 Quantitative analysis/balance area		150
21.	1 Instrument space		300
22.	1 Bulk chemical storage space		600
23.	1 Chemistry stock space		1,500
24.	2 Physics laboratories	@ 1,200	2,400
25.	2 Physics preparation and work areas	@ 200	400
26.	1 General physics storage space		800
27.	1 Photographic darkroom		200
28.	1 Geology and astronomy laboratory		1,200
29.	1 Geology preparation area		150
30.	1 Storeroom and lapidary workroom for the geology laboratory		450
31.	Science lecture rooms:		
	1 Biology lecture room (to seat 130)		1,600
	1 Chemistry lecture room (to seat 130)		1,600
	1 Physics lecture room (to seat 60)		1,000
32.	3 Work and preparation areas for lecture rooms	@ 400	1,200
33.	1 All-purpose science laboratory for high-school level curriculum with preparation and work area		1,600
34.	1 Independent science study laboratory for 20 students		1,200
35.	1 Instructors' science project room		2,000
NET TOTAL SQUARE FEET			33,350

Space Descriptions and General Facility Requirements

General

1. Lecture rooms should be windowless to provide complete light control.
2. All lecture and laboratory rooms should be provided with a demonstration desk equipped with hot and cold water, a sink, 2 gas outlets, and 110V electrical outlets. Room light control should be provided at the demonstration desk for accessibility and ease of control by the instructor. Also, safety cut-off switches for gas and electrical service in the room should be provided at the demonstration desk.

3. Conduit for educational television should be readily accessible to all science instruction rooms.

4. A sliding chalk board with multiple sections should be installed in all laboratories and lecture rooms at sufficient height above the demonstration desk to present an unobstructed view by seated students. Map rails should be provided above all chalk boards.

5. Provision should be made for the permanent installation of a pull-down screen for visual projections in all science instruction rooms.

6. A "pass-through" arrangement should be provided in all laboratories and lecture rooms between the preparation or storage room and the demonstration desk.

7. Layout and arrangement of laboratories should enhance ease of student supervision and control.

8. Planning should provide visual access to other science areas beyond the immediate laboratory space, yet there is need for acoustical privacy as well.

9. Passing student traffic should have visual access to laboratory activities.

10. Accessibility to laboratory storage areas should make it possible to clear the laboratory for the next class within the shortest possible time.

11. Each laboratory should have an exhibit or display area which can be seen by passing student traffic. Maximum advantage should be taken of this opportunity to place science on display. Perhaps the suggested marine aquarium could be highlighted as a feature of the Science Center.

12. Insofar as is possible, laboratories should be planned to serve more than one science discipline should a change be required in the future. A possible exception is chemistry.

13. Each science laboratory and lecture room should be provided with at least 6 linear feet of tack board near the entrance of the room.

14. All preparation and work spaces for laboratory and lecture rooms should contain a work counter with sink, hot and cold water, gas, and 110V AC electrical service. Open shelving and cupboard space should be provided.

15. All preparation rooms and work spaces for the same science discipline may be combined into one large preparation and work area if an adjacent location can be provided for the laboratories.

16. Wherever possible, cabinets provided for science laboratories should be movable for ease of rearrangement or exchange.

17. Appropriate storage for volatile chemicals used in science instruction should be provided.

18. Automatic washers for glassware should be installed in the chemistry and biology stockrooms.

19. Switches for the remote control of projection equipment in science lecture rooms are needed.

20. Each biology and chemistry laboratory will need a refrigerator space. An electrical outlet should be provided for the refrigerator either in the laboratory or in the preparation room.

21. Each preparation room should have positive mechanical ventilation and have special provisions for cleaning floors. A floor drain is desirable.

22. Disposal units should be installed in all work and preparation rooms for biology laboratories.

23. The room air from science laboratories, particularly biology and chemistry, should not be circulated to other rooms in the building. Special attention to ventilation needs must be provided.

General Biology Laboratories

Two general biology laboratories should be provided. Each should be designed to accommodate 32 students. Student worktables should accommodate 2 students each. The student worktables should be one-way facing tables and should have 110V AC electrical outlets installed in the table, not on top of the table.

A work counter with cupboard-type shelves should be installed along two walls, along the exterior and interior walls if possible. Four work sinks should be installed in the work counters, two on each wall. At least two duplex gas outlets should be installed above the counter on each wall. Double AC electrical outlets should be spaced at intervals of 4 feet along the counter or above the counter on the wall. Adequate enclosed wall storage should also be provided. Storage cabinets, adequate to store 32 microscopes, should be installed.

An aquarium with a capacity of approximately 50 gallons should be provided in the general biology laboratories for the collection and growing of aquatic plants and animals. A marine aquarium with running sea water should be installed in one of the laboratories. These should be planned for display purposes as well as for use to keep specimens alive.

Special considerations include the need for mechanical exhaust ventilation above the demonstration desk and floors which are impervious and easily cleaned. If possible, a direct outside exit from the biology suite is desirable. A chemical fire extinguisher should be placed in a covenient location in the biology suite.

General Biology Preparation Rooms

A preparation room and a workroom should be provided for each general laboratory. They should be equipped with a large preparation table with services for water, gas, electricity and waste. Storage cabinets both below and above the preparation table are needed. Special storage cabinets are needed for micro-projectors and other visual-aid equipment, slides, etc. Space for a refrigerator should also be provided.

Zoology Laboratory

This laboratory should be equipped with one-way facing student worktables to accommodate 3 to 4 students each. A capacity for 32 students will be needed.. Each work station should have available gas, AC electrical service, sink, and cold running water. The tops of the counters should be clear of projections, if possible.

A work counter should be installed along a side wall with two sinks and enclosed cupboard storage underneath. A glass display case should be included in one section of this counter. Gas and AC electrical outlets should be available at intervals of 4 feet to 6 feet along the counter. Cold running water should be available at the sinks.

The rear wall of the room should provide for the storage of models and microscopes for the student capacity. Thirty-two microscopes will be stored.

Zoology Preparation Room

This room should include a counter with two to four sinks for student use and a larger, deeper sink for washing zoological specimens. A large storage cabinet is needed for the storage of wet specimens.

Botany Laboratory

This laboratory should be planned to accommodate 32 students at work stations designed for 4 students each. Work stations should be one-way facing tables. Student work stations should have an AC electrical outlet.

A work counter with cupboard space below should be installed along one side of the room--the window wall would be desirable. At least two sinks should be installed in this work counter and should be supplied with hot and cold running water. Gas and AC electrical outlets should be available at 4 feet to 6 feet intervals along the counter or in the wall above the counter.

Wall cabinets along one wall are needed to store 32 microscopes and miscellaneous equipment.

Botany Preparation Room

This room should be adjacent to the Botany Laboratory and should open directly into it. There should be a work counter with a preparation sink installed in it, cupboard storage below, and cabinets above. Hot and cold water, gas, and electricity should be provided at the preparation table. At least four herbarium cases should be provided and located in the preparation room.

Physiology and Anatomy Laboratory

This laboratory should be planned to accommodate 32 students. Four 8-student tables should be provided.

Two student tables should have centrally located sinks and utility services. The other two tables should have end sinks and utility services. Each table should be provided with hot and cold water, gas, and electricity. Electrical service outlets should have variable AC and DC voltage and timed impulses. Electrical outlets should supply 0-135V AC and ½-24V DC. Provision should be made for distilled water in this laboratory.

The demonstration desk should be centrally located within the laboratory. Cabinet storage for models and microscopes is needed. Sixteen microscopes will be stored.

A counter with cupboard storage underneath should be installed along one wall of the laboratory. Electrical outlets spaced 4 feet to 6 feet apart should be installed in this counter.

Physiology and Anatomy Preparation Room

This room should be adjacent to the Physiology and Anatomy Laboratory and should open directly into it. A counter with wall cabinets above and cupboards underneath should be installed along one wall. A work sink should be installed in this counter. Hot and cold water, gas, and electricity should be provided. Compressed air and distilled water should be provided for this space. A smoke alcove for smoking kymographic drums is needed for this room. A refrigerator is also needed in this room. Adequate mechanical ventilation is needed.

Animal Room

Laboratory animals will be kept and cared for in this room. A counter with food and litter bins underneath is needed. Food bins should be moisture and rat proof. A large metal sink with hot and cold running water is needed. Approximately 10 feet of wall space is needed for animal cages. A steam cleaning line and a waste disposal unit should be provided. A drain in the floor is also needed. Direct access to the Physiology and Anatomy Laboratory is desirable.

Specimen Room

This room should provide for about 15 feet of wall space for stainless steel extremity tanks. Also, storage space should be provided for at least two portable mounted skeletons and 8 feet to 10 feet of storage cabinets.

Biology Stockroom (Storage)

This room should be equipped with 24 inch shelving running from floor to ceiling, about 15 feet of wall space for animal cages, and a work counter with cupboard storage underneath. A sink with hot and cold water is also needed. Several convenience outlets for 110V AC are also needed. Central refrigerated storage should also be provided in this room. Culture incubators for use by all biology classes should be provided. Special storage provisions are needed for radioactive materials.

General Chemistry Laboratories

Two general chemistry laboratories designed to house 32 students each should be planned. Four 8-student laboratory tables equipped with sinks and utilities should be installed. Utilities should include a cold water tap, a gas jet, and an AC electrical outlet at each student station. An acid-proof water trough should run the length of the laboratory table and empty into a deep sink at one end of the table. The laboratory tables should contain a drawer for each potential student period in the schedule. Reagent shelves should be provided above the sink at the laboratory tables or in a side wall cabinet.

A work counter should be installed along a side wall. The top should be of an acid-resistant surface. Drawer space, approximately 10 inches by 12 inches by 20 inches, should be provided underneath the counter. Fume hoods should be installed in this laboratory. Four standard 5-foot hoods mounted in pairs should be adequate. Distilled water should be provided at some central location in the laboratory.

An emergency safety unit should be installed in the chemistry laboratories and should consist of an emergency shower fixture, a floor drain, an emergency eye wash, and a chemical fire extinguisher.

Qualitative Analysis Laboratory

This laboratory should be planned exactly as the general chemistry laboratory with the following minor exceptions:

1. Special provisions should be made to directly exhaust the excess toxic (hydrogen sulfide) gases accumulating in this room.
2. Shelves should be installed along one wall for (portable) centrifuges. Electrical outlets are needed at 3-foot intervals for the centrifuges.
3. A still of not less than 2½ gallons-per-hour capacity and a 10 to 15 gallon copper-lined storage tank are needed to provide pure water. This still may serve other areas as well.
4. Laboratory tables should be four-student tables.

Quantitative and Organic Laboratory

This laboratory should be planned for both organic chemistry and for general chemistry as well. With minor exceptions, this laboratory should be planned similar to the general chemistry laboratories. The laboratory tables and equipment storage should be planned to handle the larger apparatus involved in the advanced courses, but the storage drawers under the side wall counter should be identical to those in the general chemistry laboratories. Laboratory tables should be four-student tables. Two ceramic sinks spaced 6 feet apart should be located in the counter along the side wall. Provision for fume hoods, a source of distilled water, a safety shower, and an eye wash should also be made.

Balance Rooms for Chemistry Laboratories

The balance room for the quantitative laboratory requires vibration-free weighing of samples. Students will be using these rooms for extremely accurate weighing of samples. A shelf 18 inches wide should be installed around the perimeter of the room at a height of 36 inches. Small drawers are needed at each balance station to hold the balance weights. A balance requires an area 24 inches long by 18 inches wide. This room should be extremely well lighted--65 footcandles or more. Corrosive laboratory vapors should be excluded from this room.

The two balance rooms required for general chemistry house less sensitive balances. A rigid counter extending along the perimeter of the room at a height of 36 inches should be satisfactory.

Bulk Chemical Storage Room

Chemicals are purchased in large quantities and require central storage until brought into the chemistry stockroom for use. Approximately two-thirds of the space in this room will be devoted to the storage of dry chemicals and should be equipped with 30-inch wood shelves with 18-inch vertical spacing. The remaining third should be planned for shelf storage of acids and alkalies in one-gallon containers. A water faucet and floor drain in the acid storage area is desirable. A separate means of ventilating this room is a necessity.

The Chemistry Stockroom

The stockroom should serve the following functions:

1. Preparation and weighing of solutions for all chemistry laboratories (150 square feet).
2. A work area for assembly and preparation of apparatus (100 square feet).
3. A storage and dispensing area (750 square feet).

The preparation and weighing area should have a large ceramic sink (2 feet by 3 feet) with hot and cold water, 100V AC electrical outlets, and a 4-foot counter on each side of the sink. A source of distilled water is needed at this sink. The remaining wall space in this area should be equipped with 8-inch shelving on 14-inch vertical spacing. A floor drain is needed in this area. A fixed fume hood should be installed over the sink and a part of the worktable where solutions are to be prepared.

The work area needed for assembly and repair of apparatus should be equipped with a small workbench for glass-blowing equipment. Space for several small (2 feet by 3 feet) trucks used to carry materials to the laboratories should be provided.

The storage and dispensing area will be used for the storage of currently used chemicals and equipment. A 2-foot counter should extend along the wall adjacent to a dispensing window which can be closed and locked. Cabinet storage should be provided below the counter with adjustable shelves for storage of costly equipment. Shelving from floor to ceiling should be provided in the rest of the space. Shelving 24 inches wide, spaced 14 inches vertically, and extending from floor to ceiling should be provided. Only minimum aisle widths need to be maintained.

Physics Laboratories

Two laboratories should be planned with capacities of 32 students each. Student tables should be one-way facing tables and equipped with a sink, a constant pressure cold water supply, service for AC-DC electricity, and gas. Provision should be made for mounting apparatus on vertical supports at the student stations. Similarly, provision should be made on walls and at ceilings for mounting barometers, thermometers and other apparatus in convenient locations.

Darkroom

A darkroom is needed adjacent to, or as a part of, one physics laboratory. The room should have a counter, a small sink, and several 110V AC electrical outlets. Provision should be made for a light-tight door, safe lights, and adequate ventilation. The counter will provide space for an enlarger, a printer and solution trays, and cabinet storage underneath.

Physics Storeroom

This room is to be used exclusively for the storage of physics apparatus of varying sizes. Floor to ceiling shelves and wall cabinets of varying widths and vertical spacing are needed. Aisle widths should accommodate apparatus carts.

Geology Laboratory

This laboratory should be equipped for 32 students. Four 8-student tables equipped with AC electrical and gas outlets at student stations should be provided.

A counter with cupboard space underneath should be provided along a side wall. Two sinks equipped with sediment traps and cold and hot water should be installed at opposite ends of the counter. The counter should also be equipped with gas and electrical outlets spaced at 4 feet to 6 feet intervals.

One wall of the laboratory should be equipped with cabinets with glass doors for the storage and display of specimens.

Geology Storage and Lapidary Space

This space should serve as a display-storeroom and as a workroom for cutting and polishing stones. Cabinets from floor to ceiling should be installed on one wall of this room. A work counter with sink should be installed on a second wall.

Science Lecture Rooms

Three science lecture rooms are needed. Two should be planned to seat from 125 to 130 students and the third should seat approximately 60 students. These rooms should be windowless to reduce exterior noise and to provide optimum light control for using visual aids.

Seating arrangements should provide for elevated seats in tiered sections which provide a clear view of the top of the demonstration desk. Room acoustics should accommodate the instructor's voice without sound amplification, although sound amplification should be possible in these rooms.

Shapes of rooms should be determined by appropriate sight lines and viewing angles as well as the need for the student to be as close to the instructor's desk as possible. At lease four 110V AC electrical wall outlets should be installed, one each at the front, back and two side walls.

Provision should be made for the use of portable fume hood equipment in the lecture rooms. Compressed air should also be available at the demonstration desk in addition to the utility services already outlined.

All-Purpose Science Laboratory

This laboratory should be planned to accommodate 32 students at eight 4-student tables. Student tables should each have 110V AC electrical outlets, sink and cold water, gas, and compressed air.

A counter with cabinets below should be installed along one wall as a work and storage area. Two sinks should be installed in this counter and cold water and waste lines supplied to these sinks.

Student tables should be equipped with drawers--one for each student station period. Storage cabinets and display cases should also be provided. Provision should be made for the use of a portable fume hood at the demonstration desk.

Independent Science Study Laboratory

This laboratory should serve students who are capable of independent study under minimum supervision. It should be equipped with 20 study carrels and 10 laboratory work stations. Laboratory work stations should be installed along the periphery of the room and equipped with sink, water, gas, AC-DC electricty, and compressed air. Drawer space should be provided in the worktable for as many students as possible.

The independent study carrels should have provisions for film and film clips, audio tape playback, closed-circuit TV reception, a sound monitoring system, and the potential of a dial access information retrieval system.

Storage facilities should include space for storing apparatus carts with experiments and individual projects of students. The experiment carts will be wheeled from the storage area to the work station for service and utilities. Experiments will be set up on the cart and conducted at the work station.

Instructors' Project Room (Workshop)

This facility should provide both the space and equipment necessary for science instructors to:

1. Set up equipment they will use which requires permanent installation.
2. Set up equipment for experiments requiring temporary installation.
3. Make trial demonstrations.
4. Build mock-ups, demonstration panels, instructional aids, models, and devices.
5. Test and repair equipment, instructional aids, and devices.

The workshop should contain three types of space: (1) a workshop area where tools, equipment and materials are stored and used for building instructional aids and devices and for repairing same. Large equipment should include a band saw, a bench saw, and a small plane; (2) a space for 22 faculty "experimental" or "research" stations which should include work counter space with work sink and utilities such as gas, water, electricity (variable voltage), and compressed air; and (3) an enclosed area housing four fume hoods, chemical storage cabinets and shelves, and work counter space with work sinks and cabinets underneath.

Space Relationships

The following comments with regard to facility locations and relationships are made:

1. All science facilities should be located in close proximity to each other, perhaps in a single science building.
2. Science instructors' offices should be located in close proximity to the laboratories.

3. The lecture, laboratory and storage areas of a science discipline should be considered as a unit and be located on the same level and in the same general area.
4. Science facilities should be located as close as possible to facilities for technical education.
5. Work, instrument and preparation rooms serving a laboratory should be located adjacent to it.
6. Science facilities should be located adjacent to a wild area for outdoor science instruction.
7. The Science Center should be in close proximity to the Instructional Resources Center and to classroom buildings.
8. Because of various functional considerations and administrative conveniences, the science areas appear to divide themselves naturally into four major functional components: physics, chemistry, biological sciences, and core (common) services. It is critical, however, that it be understood that there is no clear line of separation between any two of these functions. For this reason, it is essential that the architecture for the science facilities express the growing unity of the sciences. Presently, the more important relationships that should be expressed physically are between physics and chemistry, between chemistry and biological sciences,and between the core services and the three science areas.

Figures 16.1, 16.2 and 16.3 are diagrams of general facility and intra-unit relationships for the science curriculum.

Figure 16.1: General Relationships for Science Facilities

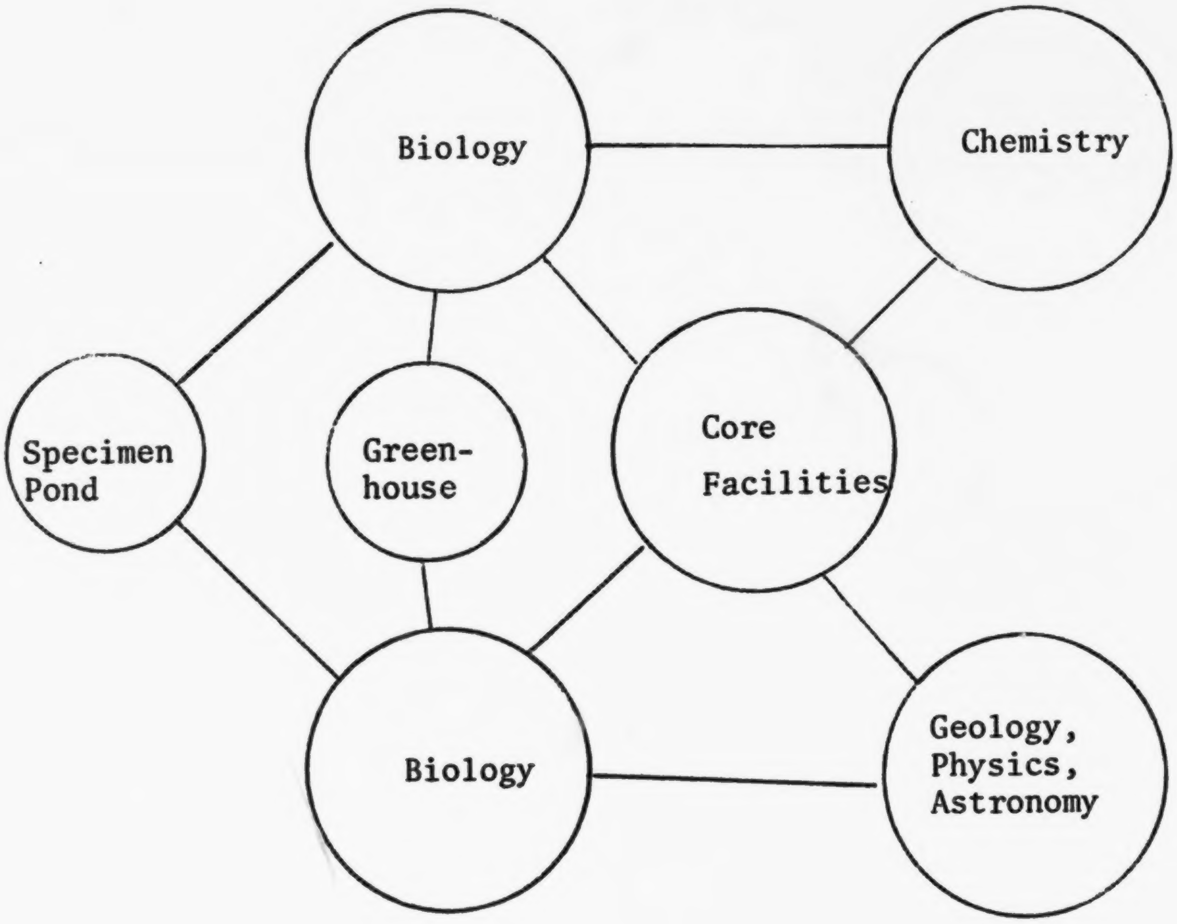


Figure 16.2: Unit Relationships for Science Facilities

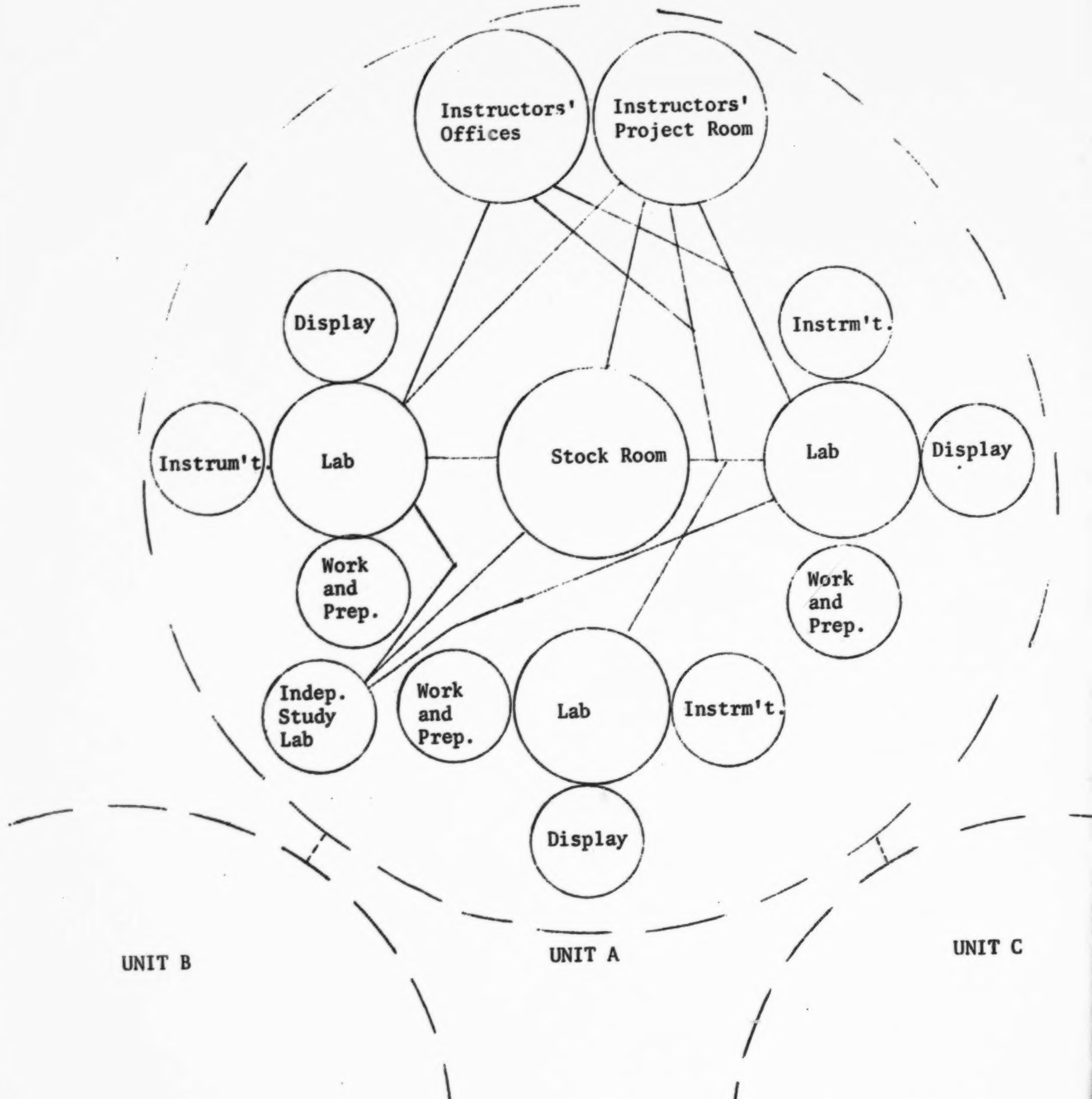
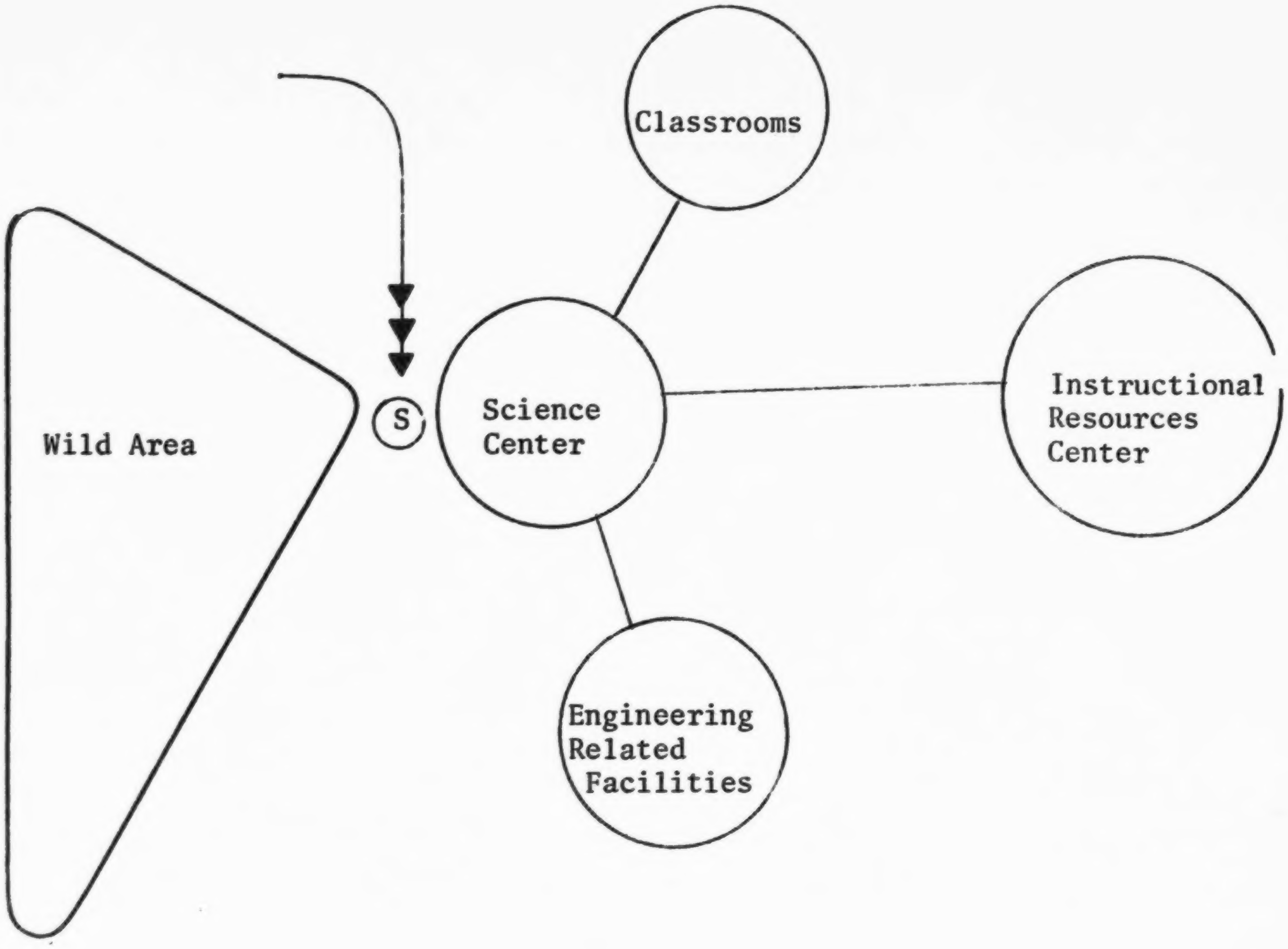


Figure 16.3: Overall Facilities Relationships


Classrooms
Wild Area
S
Science Center
Instructional Resources Center
Engineering Related Facilities

CHAPTER XVII

FACILITIES FOR BUSINESS AND COMMERCE

Introduction

Several of the educational programs to be implemented at the College have elements of commonality, in that they all are related to education in preparation for careers in business or commercial enterprise. For this reason, the educational specifications for the facilities needed to implement these programs have been grouped together in this Report. It is suggested that a physical grouping of these same facilities be made on the College campus.

The instructional programs involved include College Parallel courses in Business Administration and the following Occupational programs:

1. Office Occupations and Secretarial Science
2. Business Management, Accounting, and Finance
3. Data Processing
4. Marketing and Distribution

It is projected that the College personnel will be involved in these programs to the extent indicated in Table 17.1. The estimates of the number of students and faculty members in the day programs have been obtained, with but minor revision, from the document which presented the College's long range plans;[1*] estimates of personnel in occupational extension and adult programs have come from faculty members now associated with such programs in the Seattle public school system.

[1*] Associated Consultants in Education, Inc., *Long Range Planning for Seattle Community College*, Tallahassee, Florida: ACE, 1966, pp. 129-35 (Preliminary Report Mimeo).

Table 17.1: College Personnel Associated with Business and Commerce for the South Campus of Seattle Community College

PROGRAM	DAY PROGRAM		OTHER PROGRAMS[a]	
	Faculty	Students	Faculty[b]	Students[b]
Courses in Business Administration	6	140[c]	-	-
Office Occupations and Secretarial Science	12	270	8	200
Business Management, Accounting, and Finance	8	180	6	150
Data Processing	3	40	1	20
Marketing and Distribution	12	300	3	90

[a] Includes Occupational Extension, Adult General Education, and Community Service

[b] FTE

[c] It is estimated that 4.6 percent of the enrollment in the College Parallel Program at Seattle Community College will "major" in business administration subjects. This proportion is approximately equivalent to 140 FTE's continuously in attendance in such subjects.

A summary of the total facility needs for these units of the College is presented in Table 17.2. Details of facility needs for the separate instructional areas are outlined in subsequent sections of this chapter. The general relationships of spaces within this area are shown diagrammatically in Figure 17.1. The relationships of this area to other facilities of the College are shown in Figure 17.2.

Table 17.2: Summary of Spaces Needed to Implement the Instructional Program in the Division of Business and Commerce for the South Campus of Seattle Community College

Space Description	Number of Units	Approximate Total Space (Square Feet)
Auditorium/Lecture Theatre	1	(a)
General Purpose Classrooms	(a)	(a)
Special Purpose Classrooms	3	2,900

Table 17.2 (Continued)

Space Description	Number of Units	Approximate Total Space (Square Feet)
Seminar Rooms	(a)	(a)
Single-Use Laboratories	4	6,100
Multiple-Use Laboratories	6	5,950
Departmental Offices	(a)	(a)
Departmental Reception Areas	(a)	(a)
Staff Offices	(a)	(a)
Evening Staff Offices	(a)	(a)
Toilet Areas	(a)	(a)
Student Study Lounges	3	700
Faculty Lounge	1	400
Workrooms, Storage and Special Rooms	7	2,020
Storage Supporting Instruction	5	750
Other (including general storage, custodial services, etc.)	(a)	(a)
TOTAL		18,820

(a) Requirements are included elsewhere in this Report.

COLLEGE PARALLEL COURSES

Business Administration

Philosophy and Objectives

The purpose of the instructional program in pre-Business Administration is to provide the first two years of college study for students, both full- and part-time, planning to transfer to a senior college or university. These courses are designed to be "equivalent" to similar courses at the institutions of higher education to which the majority of students transfer. These courses are provided by the community college in order to prepare students for further education and are closely articulated with the offerings of senior institutions.

Figure 17.1: General Relationship of Specialized Spaces within Business and Commerce

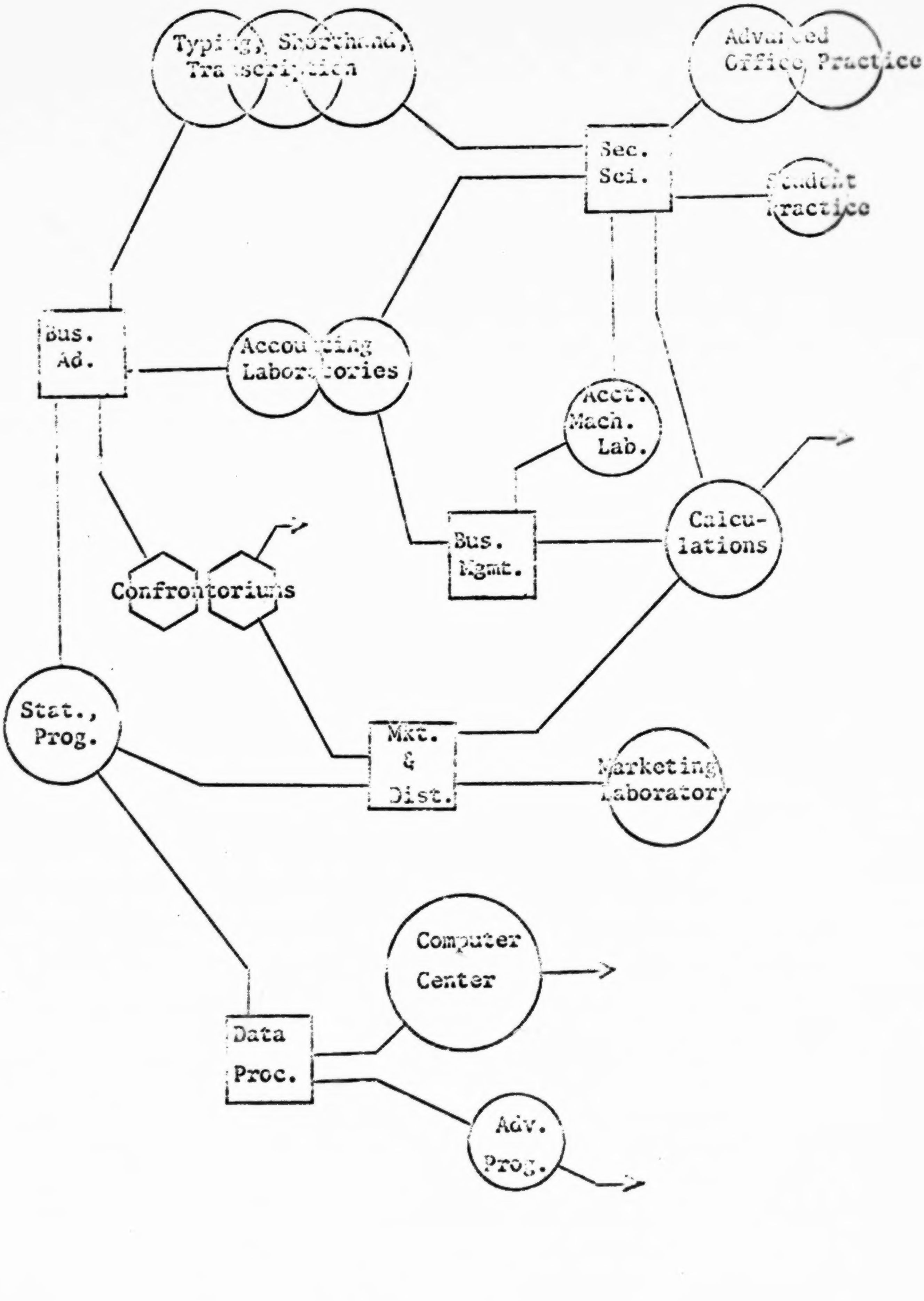
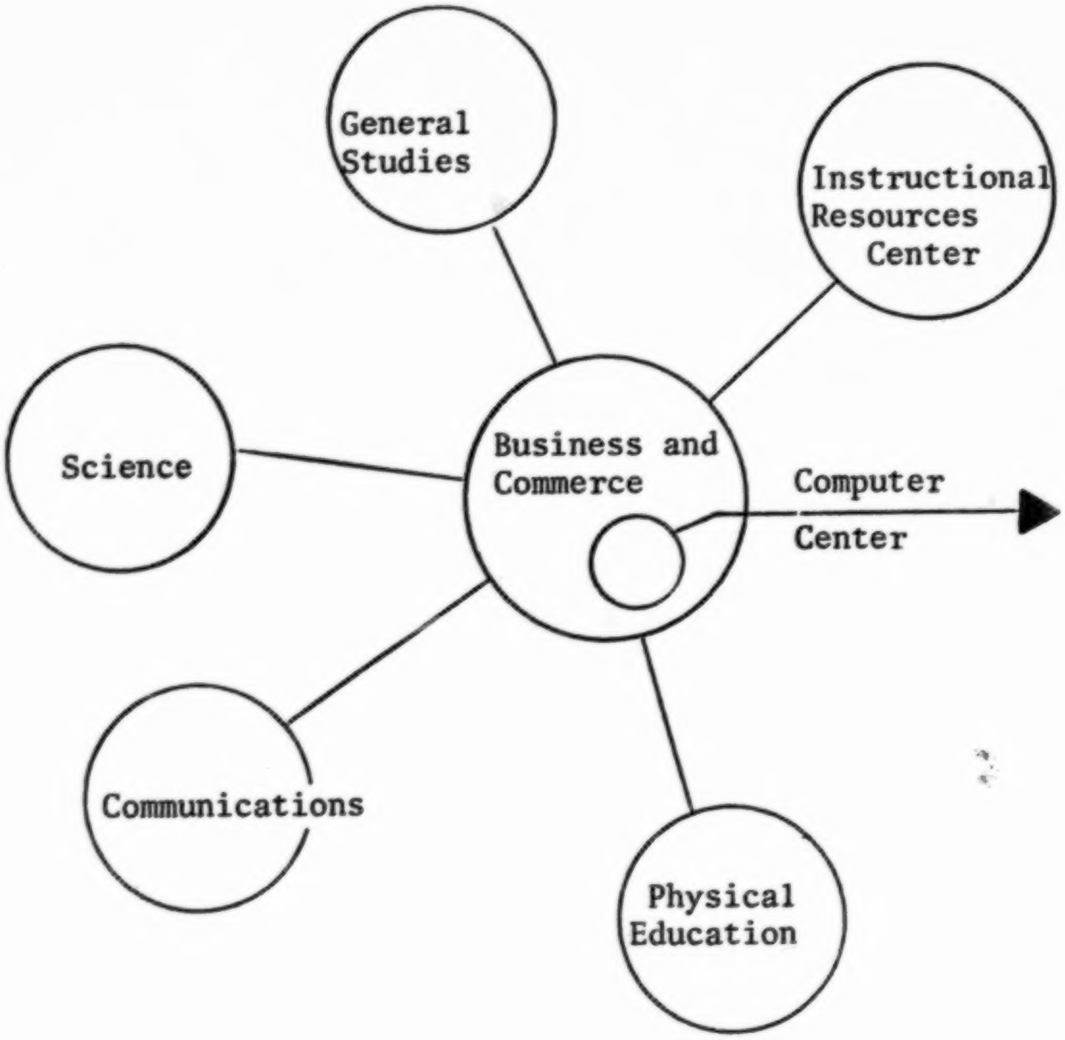


Figure 17.2: General Relationship of the Facilities for Business and Commerce to Other Facilities on Campus



Curricula and/or Courses

The Business Administration courses offered in the College Parallel Program may include the following:

1. Principles of Accounting (3 courses)
2. Introduction to Business
3. Business Correspondence
4. Business Law
5. Statistical Analysis
6. Typing

Curricular areas associated with the pre-professional studies include the following:

1. Communications
2. Social studies
3. Humanities
4. Mathematics
5. Physical education
6. Science

Teaching and Learning Activities

Teacher activities will include lecture demonstrations, use of visuals and audio-visuals, consulting with individuals, leading discussions, and supervising student practice. Student activities will include listening to lectures, taking notes, observing demonstrations, observing visuals and audio-visuals, participating in discussions and seminars, and practice in the development of skills.

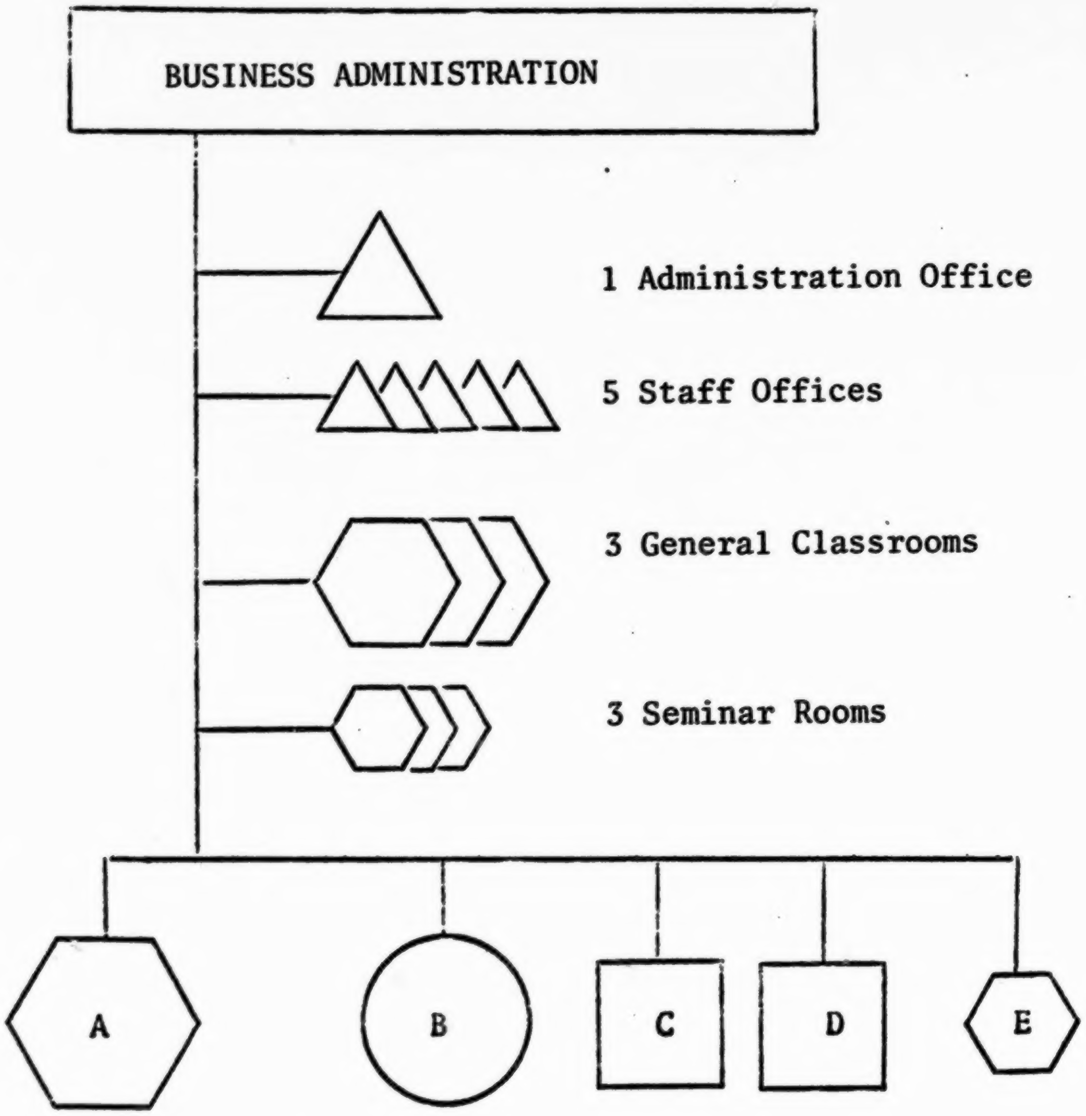
Student Groups

Class sizes are expected to range between 30 and 35 students in first-year courses and approximately 20 students in second year subjects. The possibility exists that large lecture sections (120 students) associated with small seminar sections (20 students) may be used as a scheduling pattern.

Space Components of the Instructional Program

Figure 17.3 shows the number and types of spaces needed to implement the instructional program. It will be noted that an administrative office, five other staff offices, three general-purpose classrooms, one teaching auditorium, three seminar rooms, and an accounting laboratory have been provided.

Figure 17.3: Spaces Needed to Implement the Instructional Program in Business Administration



A. Lecture Theatre
B. Accounting Laboratory
C. Accounting Laboratory
D. Statistics Laboratory
E. Confrontorium

Other spaces, assigned to other instructional units in this facility, will also be available for use in Business Administration instruction. Table 17.3 gives a description of certain of the specialized spaces assigned to this area and provides cross-references for descriptions of other spaces.

Table 17.3: Comments on Some Space Needs for the College Parallel Program in Business Administration for the South Campus of Seattle Community College

A. Lecture Theatre

Approximate Area:	2,000 square feet
Student Stations:	150
Usage:	Regular usage in introductory courses in business and accounting (a shared facility).
Remarks:	See chapter on "Teaching and Fine Arts Auditorium" for facility needs.

B. and C. Accounting Laboratory

Approximate Area:	1,000 square feet each of two rooms
Student Stations:	36 each
Usage:	Bookkeeping and introductory accounting laboratory (a shared facility).
Remarks:	See "Business Management, Accounting, and Finance", this chapter, for edspecs.

D. Statistic Laboratory

Approximate Area:	800 square feet
Student Stations:	24/48
Usage:	Statistics, bookkeeping and computer programming (a shared facility).
Remarks:	See "Business Management, Accounting, and Finance", this chapter, for edspecs.

Table 17.3 (Continued)

E. Confrontorium

Approximate Area:	850 square feet
Student Stations:	40
Usage:	Introductory law, student meetings, faculty meetings, testing, and use in the Student Personnel Program (a shared facility).
Remarks:	See "Business Management, Accounting, and Finance", this chapter, for edspecs.

Occupational Programs in Office Occupations and Secretarial Science

Philosophy and Objectives

The program of instruction in Office Occupations and Secretarial Science will serve both full- and part-time students. Various age groups and ability groups are expected to be included in the men and women enrolled. Some students will pursue an Associate Degree program in this area, some will seek to develop single skills in this cluster of occupations, and some will be enrolled for purposes purely secondary to their major educational objectives. The Associate Degree programs will serve to train individuals for entry-level positions in the domain of office occupations. Certificate and other programs will serve to satisfy specific individual needs.

Curricula and Courses

Curricula includes the following:

1. Secretarial Science (Associate Degree Program)
2. Stenography (Diploma Program)
3. Typing and General Clerical (Certificate Program)

The courses which appear in the above curricula include the following:

1. Typing I
2. Typing II
3. Typing III
4. Typing--Speed Building
5. Shorthand I
6. Shorthand II

7. Shorthand III
8. Transcription I
9. Transcription II
10. Transcription III
11. Adding Machines
12. Calculating Machines
13. Comptometry
14. Duplication Processes
15. Machine Transcription
16. Business English
17. Secretarial English
18. Office Practice
19. Secretarial Practice
20. Key Punch
21. Filing
22. Office Production

Curricular areas closely allied to this area of specialization include the following:

1. Communications
2. Business arithmetic
3. Personal development
4. Business ethics

Teaching and Learning Activities

Teacher activities will include lectures, demonstration of techniques and devices, supervision of practice, consultation with individuals, presentation of visuals and audio-visuals, and time testing. Student activities will include listening to lectures, observing demonstrations, practicing techniques, becoming familiar with equipment and devices, practicing development of skills and productive speed, observing visuals and audio-visuals, and demonstration of proficiency by time tests.

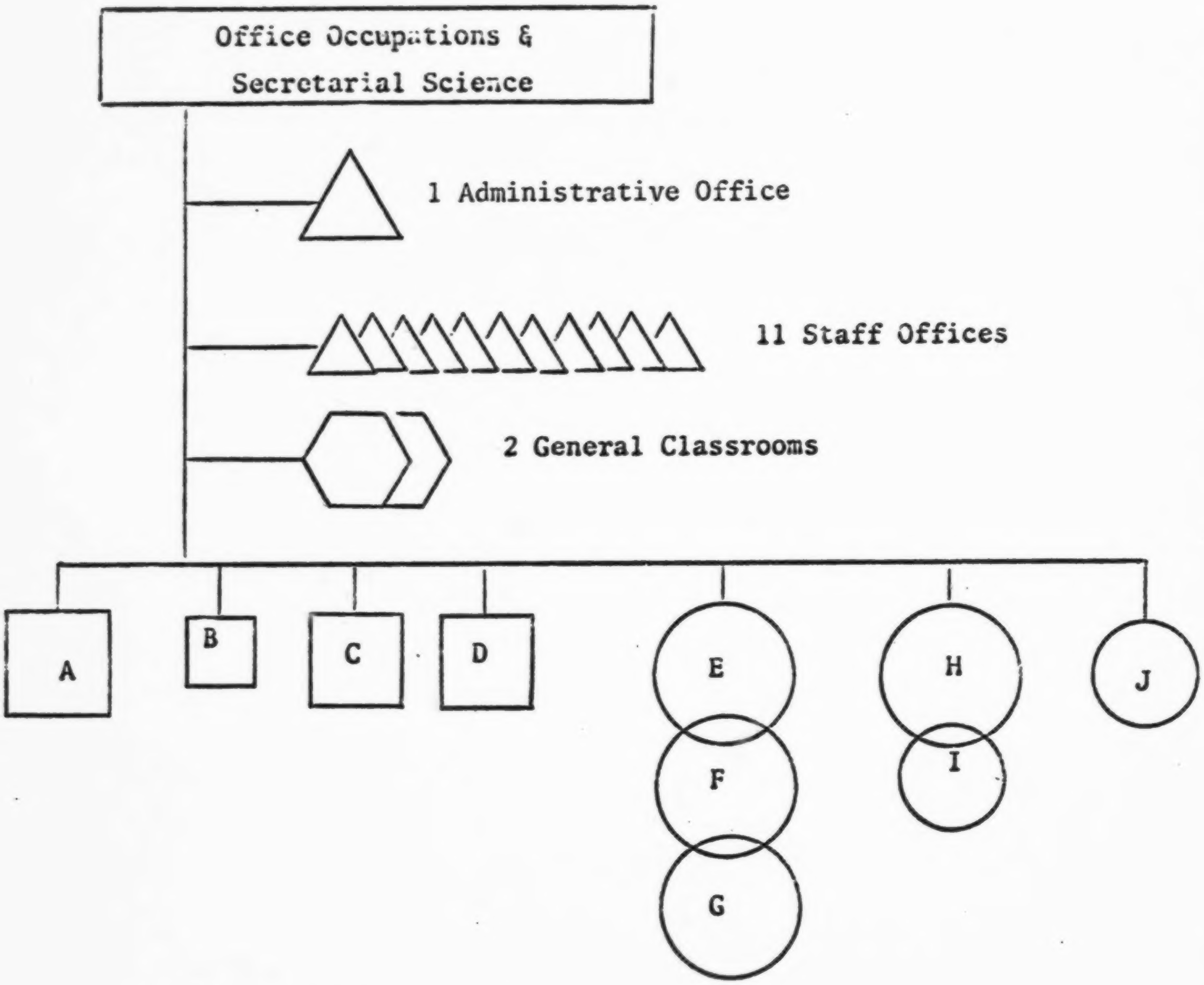
Student Groups

Class sizes are expected to be 30 to 35 students in all courses. Student groups in Degree programs are expected to be more homogeneous than in Diploma or Certificate courses, where there is expected to be a wider range of age and ability levels. It is not expected that students in Associate Degree programs, Certificate programs, and Diploma programs will be simultaneously scheduled into any classes.

Space Components of the Instructional Program

Figure 17.4 shows the number, types and relationships of spaces suggested to implement the instructional program. It will be noted that an administrative office, eleven instructors' offices, two general purpose classrooms, and certain specialized spaces have been recommended for the Office Occupations area. Some of these

Figure 17.4: Spaces Needed to Implement the Instructional Program in Office Occupations and Secretarial Science



A. Accounting Laboratory
B. Accounting Machines Laboratory
C. Key Punch Room
D. Calculations Laboratory
E. Typing, Shorthand, and Transcription
F. Typing, Shorthand, and Transcription
G. Typing, Shorthand, and Transcription
H. Advanced Office Practice, Duplication, Filing
I. Advanced Office Practice, Duplication, Filing
J. Student Practice Room

specialized facilities are to be shared with other units of the institution, as are all the classrooms.

Table 17.4 gives details for the specialized facilities associated with Office Occupations and Secretarial Science.

Table 17.4: Comments on Some Space Characteristics for Office Occupations and Secretarial Science for the South Campus of Seattle Community College

A. Accounting Laboratory	
Approximate Area:	1,000 square feet
Student Stations:	36
Usage:	Bookkeeping in Secretarial Science, and Accounting in Business Management and Business Administration (a shared facility).
Remarks:	See "Business Management, Accounting, and Finance", this chapter, for edspecs.
B. Accounting Machines Laboratory	
Approximate Area:	1,100 square feet
Student Stations:	12/24
Usage:	Accounting machines operation and survey courses in accounting machines (a shared facility).
Remarks:	See "Business Management, Accounting, and Finance", this chapter, for edspecs. This is a "high-visibility" area.
C. Key Punch Room (in Computer Center)	
Approximate Area:	1 area, 300 square feet
Student Stations:	-
Usage:	Incidental usage by students in this department for key punch and unit records instruction (a shared facility).
Remarks:	See "Data Processing", this chapter, for edspecs.

Table 17.4 (Continued)

D. Calculation Laboratory

Approximate Area:	1,050 square feet
Student Stations:	40
Usage:	Adding machines operation (a shared facility).
Remarks:	See "Business Management, Accounting, and Finance", this chapter, for edspecs.

E. Typing Laboratory

Approximate Area:	1,400 square feet
Student Stations:	35
Usage:	Typing, shorthand, transcription, business English, and speed building.
Furniture and Equipment:	35 L-shaped tables, 35 student secretarial chairs, 1 instructor's demonstration desk, 35 electric typewriters at student desks, chalk board (or wall brackets for accepting a portable chalk board), and cork board.
Remarks:	Noise suppression, electric service at all stations, aisle space needed for instructor to circulate, RAMP services to be used. This is a "high-visibility" area.

F. and G. Typing Laboratory

Approximate Area:	1,400 square feet each of two rooms
Student Stations:	35 each
Usage:	Typing, shorthand, transcription, business English, speed building, and machine transcription.
Furniture and Equipment:	35 L-shaped desks, 35 student secretarial chairs, 1 instructor's demonstration desk, 35 electric typewriters at student desks, 35 transcription devices at student desks, chalk board (or wall brackets for accepting a portable chalk board), and cork board.

Table 17.4 (Continued)

Remarks:	Noise suppression, aisle space for instructor circulation, electric service at each student station, RAMP services to be used, and in-room storage. This is a "high-visibility" area.

H. Advanced Office Practice Laboratory

Approximate Area:	1,200 square feet
Student Stations:	30
Usage:	Advanced office practice, duplication, filing, and overflow from other laboratories.
Furniture and Equipment:	30 desks and chairs, 30 electric typewriters, 30 transcription devices, 2 PBX stations with 30 telephones at student desks, and file cabinets.
Remarks:	Contiguous to Room I, with free access, noise suppression, and electric service to all stations. Simulate a contemporary office setting for this laboratory. This is a "high-visibility" area. Consider ceiling electric service in order that desks may be moved. Provide for central dictation through telephone system.

I. Duplication and Filing Room

Approximate Area:	250 square feet
Student Stations:	-
Furniture and Equipment:	Mimeograph, spirit duplicator, photocopiers, other duplicators, addressograph, letter folder, file cabinets, card files, and other filing equipment.
Remarks:	Contiguous to Room H with free access, noise suppression, and in-room storage.

J. Student Practice Room

Approximate Area:	200 square feet
Student Stations:	10

Table 17.4 (Continued)

Usage:	Special private practice, unscheduled tutorial activities, and independent work in speed building.
Furniture and Equipment:	10 typing transcription carrels with chairs, 10 electric typewriters (various models), 1 study table, and incidental seating.
Remarks:	Noise suppression, access to halls, access to visible supervision, electric service to carrels, and access to a control area.

Occupational Programs in Business Management, Accounting, and Finance

Philosophy and Objectives

The program of instruction in Business Management, Accounting, and Finance will serve both full- and part-time occupational students. The men and women enrolled may pursue either Associate Degree, Diploma, or Certificate programs. The Degree and Diploma programs will serve to prepare individuals for entry-level employment in a cluster of business technology occupations; the Certificate program will serve to train individuals for specialized occupations in the business area. In addition, this College unit provides service courses in management for students enrolled in other areas.

The overall objectives are to provide preparation for students to enter technical occupations in business and industry and to provide specialized training in certain of the skills used in support of business management.

Curricula and Courses

Curricula will be based on the following instructional areas:

1. Accounting and Finance
2. Data Processing
3. Bookkeeping
4. Accounting Machine Operation

The courses which appear in the above curricula include the following:

1. General Business
2. Statistics
3. Finance
4. Business Mathematics
5. Accounting (6 courses)
6. Income Tax Accounting
7. Orientation to Accounting Machines
8. Business Law
9. Cost Accounting Auditing
10. Adding Machine Operation
11. Calculators
12. Accounting Machines (2 courses)
13. Bookkeeping (3 courses)
14. Business English

Curricular areas closely related to this College unit include the following:

1. Economics and other social studies
2. Office occupations
3. Communications
4. Management
5. Humanities
6. Data processing
7. Marketing and distribution

Teaching and Learning Activities

Teacher activities will include lecturing, working on the chalk board and with the overhead projector, using closed-circuit TV, leading discussions, supervising performance of students, using visuals and audio-visuals, demonstrating devices, and preparing visuals for use on the overhead projector.

Student activities will include listening to lectures; participating in discussions; observing demonstrations, visuals and audio-visuals; taking notes; solving problems in workbooks; using machines; using programmed text materials; and demonstrating proficiency by proper use of machines and techniques in case study problems and on tests.

Student Groups

Class sizes are expected to be 30 to 35 students in all courses, with the following exceptions:

1. Beginning classes in accounting and in general business may be taught in large classes (120 students) having small subsections (20 students) which meet on alternate days.

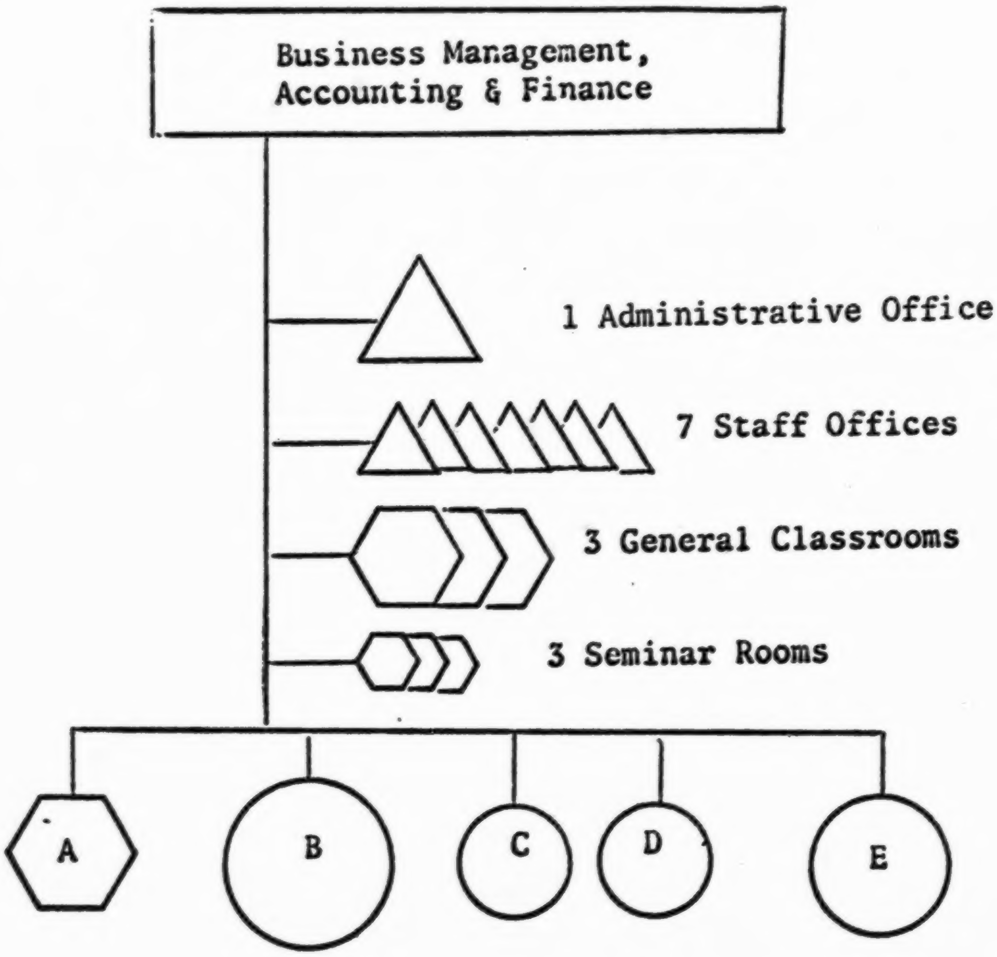
2. Law and advanced accounting classes are expected to have a seminar format, with class sizes of 20 students.
3. Accounting machines operation classes will accommodate only 12 students (24 if teamed in pairs).
4. Occupational extension and community service classes will have a "large group" (up to 120) format.

The group of students in Associate Degree and Diploma programs will be somewhat homogeneous in its characteristics, being composed primarily of young adults who have recently completed secondary school. Students in Certificate programs are expected to be much more heterogeneous with respect to age, ability levels, etc.

Space Components of the Instructional Program

Figure 17.5 shows the number, types and relationships of spaces suggested to implement the instructional program in this area. It will be noted that an administrative office, seven instructor offices, three general purpose classrooms, three seminar rooms, and certain specialized spaces have been recommended. Table 17.5 gives comments on the specialized spaces assigned to this area.

Figure 17.5: Spaces Needed to Implement the Instructional Program in Business Management, Accounting, and Finance



A. Confrontorium
B. Statistics Laboratory
C. Calculations Laboratory
D. Accounting Machines Laboratory
E. Accounting Laboratory

Table 17.5: Comments on Some Space Characteristics for Programs in Business Management, Accounting, and Finance for the South Campus of Seattle Community College

A. Confrontorium

Approximate Area:	850 square feet
Student Stations:	40
Usage:	Introductory law, student meetings, faculty meetings, testing, and use in Student Personnel Program (a shared facility).
Furniture and Equipment:	Continuous desk surfaces, 40 movable chairs, horseshoe aspect of seating, black-out capability, chalk board, cork board, conference telephone, and instructor station.
Remarks:	Raised seating (two tiers), seating for student-to-student confrontation, use of RAMP services, designed to invite debate and dignified discussion.

B. Statistics Laboratory

Approximate Area:	800 square feet
Student Stations:	24/48
Usage:	Statistics, computations, bookkeeping, and computer programming (a shared facility).
Furniture and Equipment:	Twelve 3 feet by 5 feet tables, 24/48 student chairs, 1 wall-length cabinet, 6 calculators, 6 adding machines, 1 instructor's station, chalk board, and cork board.
Remarks:	Noise suppression, RAMP services, electric service at wall-length cabinet and at each table.

C. Calculation Laboratory

Approximate Area:	1,050 square feet
Student Stations:	40

Table 17.5 (Continued)

Usage:	Instruction and practice in adding machines, calculators, and engineering calculations (a shared facility).
Furniture and Equipment:	Continuous surface desks, 40 student chairs, 1 instructor's station, RAMP services, 30 adding machines, 10 rotary calculators, 10 printing calculators, in-room storage cabinets, 1 demonstration slide rule, 1 demonstration abacus, chalk board, and cork board.
Remarks:	Electric service at student stations, noise suppression, provide floor wiring in nearby classroom area for possible duplication or expansion of this facility. This is a "high-visibility" area.

D. Accounting Machines Laboratory

Approximate Area:	1,100 square feet
Student Stations:	12/24
Usage:	Accounting machines operation and survey courses for other programs.
Furniture and Equipment:	5 Burroughs accounting machines, 5 NCR accounting machines, 2 electronic accounting machines, 5 adding machines, 1 typewriter, storage cabinets for special supplies, 10 ledger trays, chalk boards with map rails, and multi-panel sliding display.
Remarks:	Noise suppression and aisle space for student and instructor circulation. This is a "high-visibility" area.

E. Accounting Laboratory

Approximate Area:	1,000 square feet
Student Stations:	36
Usage:	Bookkeeping and accounting.

Table 17.5 (Continued)

Furniture and Equipment:	Nine 4 feet by 6 feet tables, 36 student chairs, 1 instructor's station, 1 cabinet storage unit (wall-length) with wiring for 5 adding machines, chalk board, cork board, and storage racks for students' books under tables.
Remarks:	RAMP services, especially overhead projection.

Occupational Programs in Data Processing--The Computer Center

Introduction

Data Processing is a course of study heretofore administered under the general occupational area of Business Management, Accounting, and Finance. For convenience in writing this Report and because the facilities of Data Processing will serve a campus-wide function, the edspecs for Data Processing facilities have been prepared separately.

Because the College computer system is so integrally a part of the Data Processing facilities, it is appropriate that the computer system be described here. For that reason, an extended verbatim quotation from a study document related to the Computer Center is given in the following:

A DATA PROCESSING CENTER
FOR
SEATTLE COMMUNITY COLLEGE[1]

> "The effects on contemporary life of computers and other automation-related devices are so well known that they need no comment. The ramifications to date of these aspects of technology have been enormous; there is an almost inestimable potential for the future. The community college, as the major force in higher education for the future, must face the challenges which automation hurls and must adapt the purposes, adjust the philosophy, adopt the necessary

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[1] Associated Consultants in Education, Inc., *A Data Processing Center for Seattle Community College*, Seattle, Washington: Seattle Community College, July, 1966 (Paper Prepared for the General Planning Concepts Committee).

methods, and meet such challenges. No longer viable is Carlisle's concept that 'the true university is a collection of books,' rather, the institution of higher education is a collection of ideas and tools--and computers are major tools for learning.

"Seattle Community College, to achieve the standard of excellence to which it rightfully aspires, will require a data processing system. No such system less than a network consisting of a sophisticated central computer with three terminals--one on each campus--can be visualized as filling the projected needs of the College. Recommendations for a flexible, workable system follow.

The Ultimate System

"When all three campuses of the Seattle Community College have been completed, the computer system for the College should consist of several major elements. A central computer (suggested: IBM 360 Model 40 or 50), to be installed at the last campus built, has smaller satellite computers (suggested: IBM 360 Model 20). The smaller computers allow for 'hands-on' instruction and operation at each campus in isolation from the system; they also serve as input terminals to the larger, more sophisticated and versatile central computer. Time-sharing and multiple programming features of the central computer will allow for a variety of operations to be performed almost simultaneously, with input or output from any or all satellite computers and an appreciable number of other remote terminals.

"The capabilities, features, and some suggested items of equipment are summarized below.

Capabilities

Data Processing Instruction

Financial Records of College
    Payroll
    Tuition and Fee Accounting
    Budget and Internal Audit
    Inventory

Student Scheduling
    Individual Schedules
    Resolution of Conflicts
    Room Schedules
    Class Rolls

Registrar/Admissions Records
    Grade Reports
    G.P.A. Computations
    Counselling Records
    Transcripts
    Deficiency Reports

Institutional Research
  - Student Characteristics
  - Grading Characteristics

Computer Assisted Instruction

Information Retrieval

Computer Usage in Support of Instruction

Features

- Operation in Isolated Mode
- Operation in Connected Mode
- Multiple Programming
- Multiple Terminals
- Multiple Card Processing Operations
- High-speed Input/Output
- High-speed Data Handling
- Communications Adapter
- Up to 6 Input/Output Devices Simultaneously
- Solid State Circuitry

Equipment

1 IBM/40 or 50
3 IBM/20
Dataphones
Teleconnections

Staffing

7 Professional Staff
5 Clerks/Stenographers

The Interim System

"An interim system can consist of an IBM 360 Model 20 located on the first-built Campus and the associated teleconnections to the IBM 360 located at the Seattle School District offices. When the second campus site is developed, a second IBM 360 Model 20 can be installed there and then, on completion of the third campus, both a Model 20 and a Model 50 can be installed; at this time all connections with the District computer can be transferred to the College IBM 360/50, thus making complete and self-contained the ultimate system suggested previously.

"A list of the major components of the IBM 360 Model 20 system for the first-built Campus is given below; the approximate monthly rental cost for this suggested Model 20 system is $2800.

1 360/2020 Computer
1 2501 Card Reader

1 2560 Multifunction Card Machine
1 2203 Printer
2 2415 Tape Units"

Philosophy and Objectives

The instructional program in Data Processing is designed to provide men and women with competencies to utilize data processing systems in contemporary technical, business and scientific applications.

Curricula and Courses

The courses which may appear in the Data Processing curriculum include the following:

1. Introduction to Data Processing
2. Data Processing Mathematics
3. Data Processing Operations
4. Unit Records (2 courses)
5. Data Processing Applications
6. Systems Design (2 courses)
7. Computer Programming (4 courses)
8. Service courses for other divisions

Curricular areas closely related to the Data Processing curriculum include:

1. Communications
2. Science
3. Mathematics
4. Humanities--social studies
5. Business management
6. Office occupations
7. Engineering technologies
8. Electrical occupations

Teaching and Learning Activities

Teacher activities will include lecturing, working at the chalk board and with the overhead projector, leading discussions, supervising performance of students, using visuals and audio-visuals, demonstrating devices, and supervising sophisticated equipment. Student activities will include listening to lectures, taking notes, participating in discussions, observing demonstrations, observing visuals and audio-visuals, solving problems, writing computer programs, working with sophisticated equipment, working on individual and team projects, and taking information and performance tests.

Student Groups

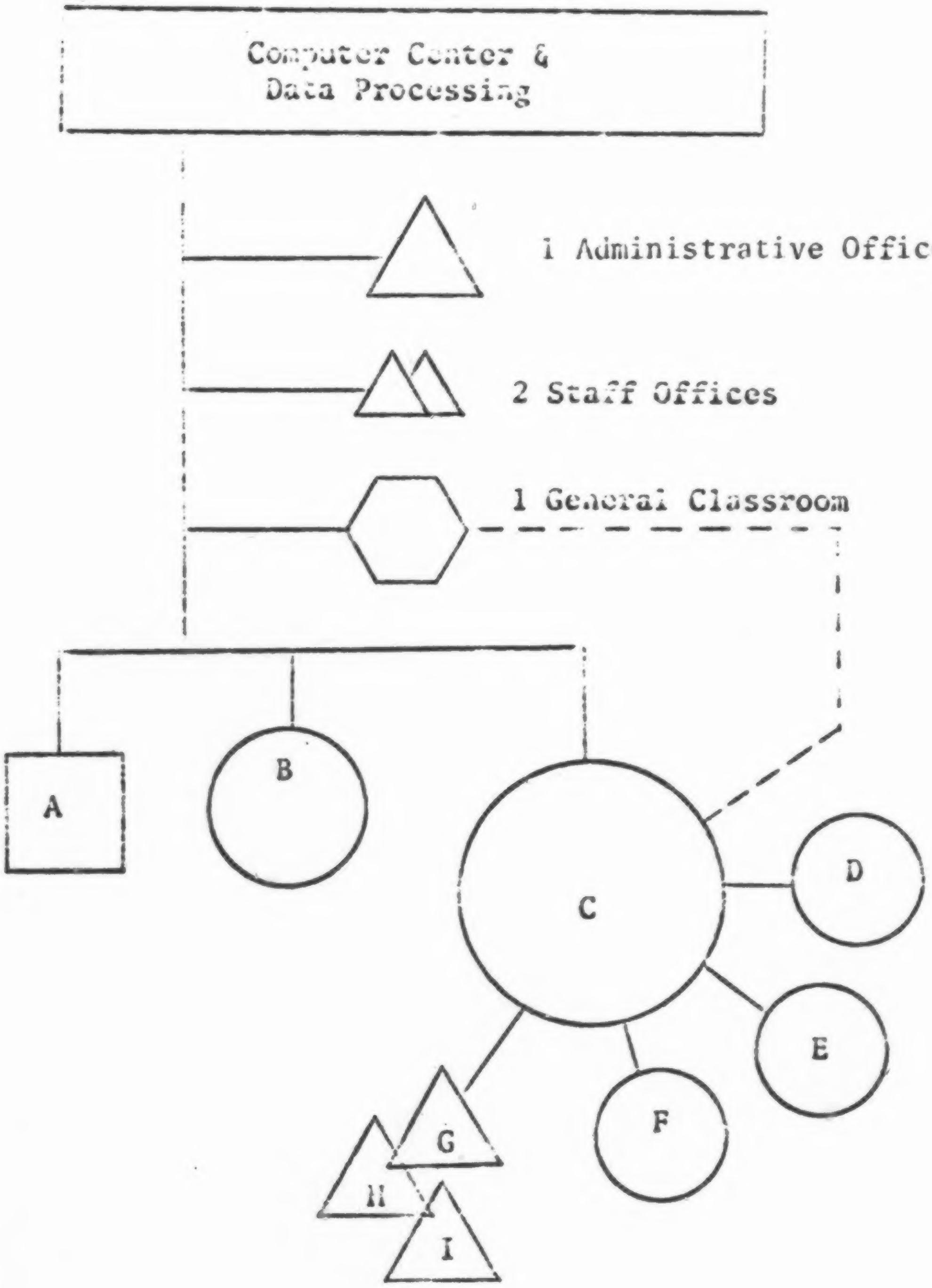
Class sizes are expected to be 15 students or fewer in advanced courses; beginning courses will probably enroll 25 students. Counseling, selective admissions, and special aptitude requirements will operate to keep the student enrollment fairly homogeneous.

Space Components of the Instructional and Operational Program

Figure 17.6 shows the spaces needed to implement the instructional program in Data Processing. Because of the unique relationship of the College Computer Center to the Data Processing Program, the spaces for the Computer Center are shown on this figure also.

Table 17.6 gives comments on certain of the specialized space needs for the Computer Center and the Data Processing Program. A general observation relevant here is that all spaces assigned to this area should be on the same floor level. Furthermore, delivery of data cards must be provided for; a freight elevator is recommended within the building (unless the Computer Center is located on the ground floor) and delivery ramps from outside are almost mandatory.

Figure 17.6: Spaces Needed to Implement the Instructional System in Data Processing; Facilities for the College Computer Terminal



A. Statistics Laboratory
B. Advanced Programming Laboratory
C. Computer Center
D. Unit Records Equipment Room
E. Key Punch Room
F. Card Storage
G. Computer Center Director's Office
H. Computer Center Reception Area
I. Computer-College Coordination Office

Table 17.6: Comments on Some Space Characteristics for Data Processing for the South Campus of Seattle Community College

A. Statistics Laboratory

Approximate Area:	800 square feet
Student Stations:	24/48
Usage:	Statistics, computations, bookkeeping and computer programming (a shared facility).
Remarks:	See "Business Management, Accounting, and Finance", this chapter, for edspecs.

B. Advanced Programming Laboratory

Approximate Area:	400 square feet
Student Stations:	20
Usage:	Programming courses and incidental use by students in other divisions.
Furniture and Equipment:	8 tables with student chairs and in-room storage.
Remarks:	Access to Key Punch Room and Unit Records Equipment Room. Conducive to independent work.

C. Computer Center

Approximate Area:	800 square feet
Usage:	"Hands-on" instruction for Data Processing and electrical students and use by professional staff in implementing services of the College computer systems.
Furniture and Equipment:	IBM 360/20 computer, 2 tape units, 1 multi-function card machine, 1 printer, 1 card reader, miscellaneous furniture, and storage.
Remarks:	Free access floor (8 inches), air-conditioning, multiple teleconnections to outside, maximum "visibility" including a glass wall separation with a general classroom, and desks for operating personnel.

Table 17.6 (Continued)

D. Unit Records Equipment Room

Approximate Area:	400 square feet
Usage:	Data Processing.
Furniture and Equipment:	Reproducing punch, collator, sorter, card storage cabinets, and miscellaneous tables.
Remarks:	Free access floor (8 inch), noise suppression, access to Computer Center, Key Punch Room, College-Computer Coordination Office. This is a "high-visibility" area.

E. Key Punch Room

Approximate Area:	300 square feet
Student Stations:	8
Usage:	Incidental use by secretarial science students, use by other divisions, and use as productive facility.
Furniture and Equipment:	6 key punch machines, 2 verifiers, and 8 secretarial chairs.
Remarks:	Free access floors, noise suppression, and access to Unit Records Equipment Room.

F. Card Storage

Approximate Area:	100 square feet
Usage:	Storage of blank and punched cards.
Furniture and Equipment:	Filing cabinets for IBM cards and shelving.
Remarks:	Maximize storage, including ladder to reach high points; carts will be rolled into this area from outside; this area is also a program library and should not provide access to unauthorized personnel.

Table 17.6 (Continued)

G. Computer Center Director's Office

Approximate Area:	150 square feet
Remarks:	See other edspecs. This area will have high concentration of use with professional staff. This is not the teaching office.

H. Computer Center Reception Area

Approximate Area:	120 square feet
Remarks:	See other edspecs. This room is to contain the secretary to the Computer Center, will serve campus visitors, and will assist in College administration.

I. College-Computer Coordination Office

Approximate Area:	250 square feet
Usage:	In-out service for Computer Center activities, production area for College administration, liaison for Registrar, Business Manager, etc., and liaison for faculty members.
Furniture and Equipment:	Secretary's desk and chair, key punch, typewriter, sorter, mailboxes, work stations for student assistants, test scoring devices, etc.
Remarks:	Divided areas of 125 square feet each, noise suppression, access to Computer Center Director's Office, access to Unit Records Equipment Room, and computer.

Occupational Programs in Marketing and Distribution

Philosophy and Objectives

The program in Marketing and Distribution will serve both full- and part-time students. A variety of age and ability groups are expected to be included in the groups of men and women enrolled.

Some students will pursue an Associate Degree program in this area; some will seek to develop a spectrum of competencies in this cluster of occupations; while others will pursue a Diploma or Certificate program in this area. This College unit will also provide service courses for students in other areas.

Curricula and Courses

Courses of study may include the following:

1. Insurance Risk Management
2. Real Estate
3. Retail Management
4. Retail Selling

Courses which will appear in the above program of studies are projected to include:

1. Risk Insurance
2. Credit and Collection
3. Underwriting
4. Agency Management
5. Risk Management
6. Contracts
7. Easements
8. Title
9. Zoning
10. Public Relations
11. Marketing
12. Marketing Management
13. Marketing Problems
14. Retailing and Merchandising
15. Marketing Research
16. Salesmanship
17. Product Study
18. Sales Promotion
19. Cooperative Work Seminars

Curricular areas closely allied to this area of specialization include the following:

1. Communications
2. Personal development
3. Business ethics
4. Business arithmetic

Teaching and Learning Activities

Teacher activities will include lecturing, demonstration of techniques, demonstration of devices, supervision of practice, consultation with individuals, presentation of visuals and audio-visuals.

Student activities will include listening to lectures, observing demonstrations, practicing techniques, becoming familiar with equipment and devices, practice in development of skills, practice in development of techniques, observing visuals and audio-visuals, and demonstration of proficiency in using techniques.

Student Groups

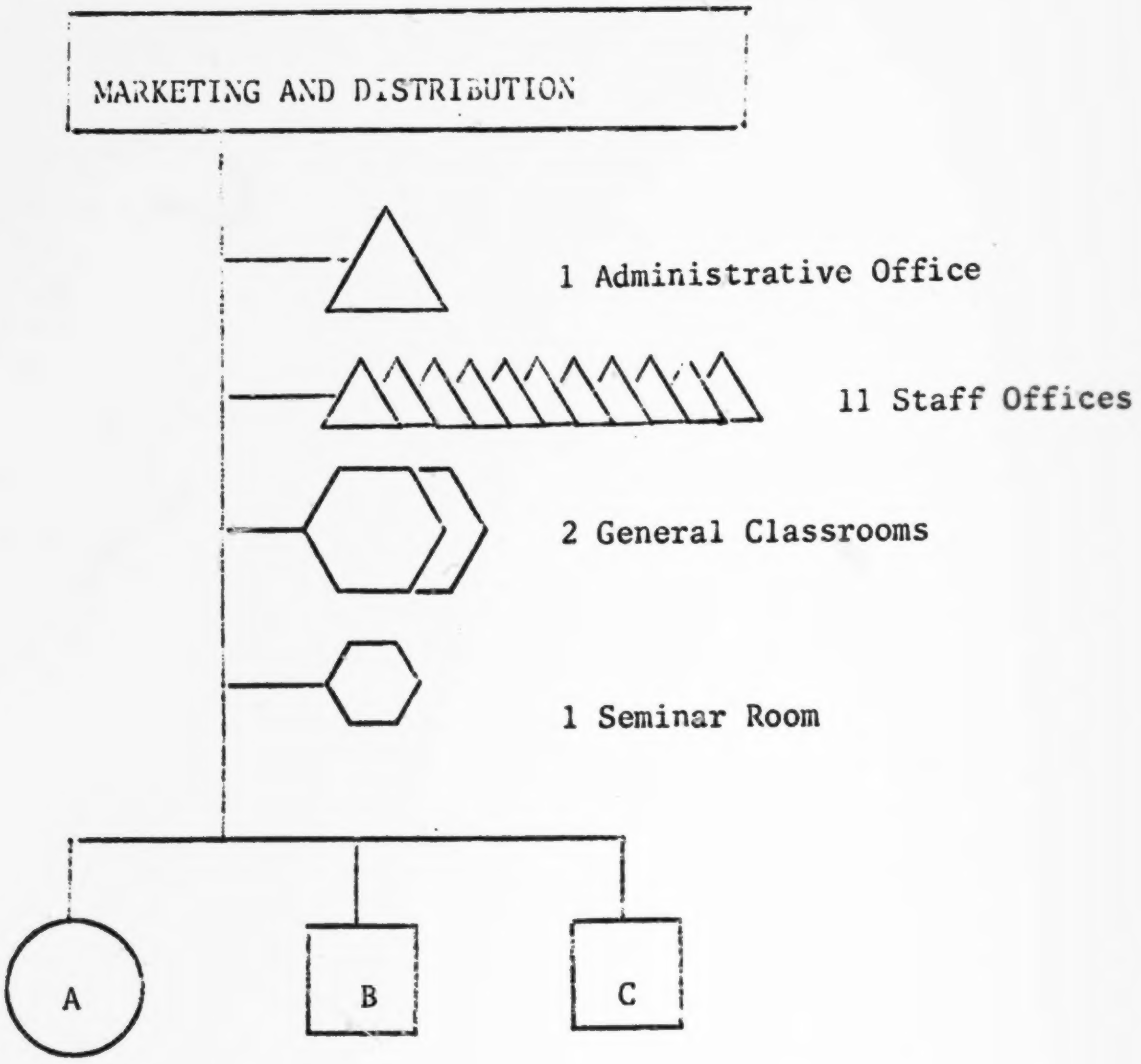
Class sizes are expected to range from 30 to 40 students in all courses. Student groups in Degree and Diploma programs are expected to be more homogeneous than in the Certificate courses, where it is expected to find a wider range of age and ability levels.

Space Components of the Instructional Program

Figure 17.7 shows the number, types and relationships of spaces suggested to implement the instructional program. It will be noted that, in addition to an administrative office, eleven instructor's offices, one seminar room, two general purpose classrooms, and a Multi-Purpose Activity/Learning Center has been recommended for the Marketing and Distribution area. It is also expected that certain offerings in the area of Marketing and Distribution will be held in facilities which are shared with both Office Occupations/Secretarial Science, and Business Management, Accounting, and Finance. Shared use is also expected in terms of the seminar room and classrooms previously mentioned.

Table 17.7 gives details for the Multi-Purpose Activity/Learning Center associated with Marketing and Distribution.

Figure 17.7: Spaces Needed to Implement the Instructional Program in Marketing and Distribution



A. Multi-purpose Learning/Activities Center

B. Calculations Lab

C. Statistics Lab

Table 17.7: Comments on Specialized Space Needs of Marketing and Distribution for the South Campus of Seattle Community College

A. Multi-Purpose Activity/Learning Center

Approximate Area:	1,800 square feet
Student Activity Stations:	40
Usage:	This would be a large space where many activities could be taking place simultaneously. The large floor space could be thought of as many zones of activity, some scheduled and others open laboratory activities. These centers may include the following:

Merchandise Control Center: Where ordering, receiving, marking, storing, inventory control, and related activities would take place. Equipment would include dummy merchandise of all kinds (e.g., foodstuffs, packaged soft goods, small hardware, boxed items, etc.). Equipment would also include marking equipment, labels and tickets, inventory, and buying/ordering/control forms.

Merchandise and Product Knowledge Study Center: Where the study of basic materials of consumer goods such as leathers, natural and man-made fabrics, home furnishings, general product classification categories, petroleum and automotive related products could be studied. Equipment would include mock-ups, cutaways, large charts, manuals, pamphlets, and samples.

Customer Sales and Service Center: Where presentation of merchandise (or service) to customer, arrangement of stock for self-service, self help or personal selling, point of sale presentation or merchandise, and other types of activities could be experienced and practiced. Equipment would include merchandise gondolas and shelving, dry goods, fixtures, and glass bins. Also needed would be portable check-out stands, scales, and small self-service baskets or carts.

Point of Sale and Visual Display Preparation Center: Where the preparation of a wide variety of visual merchandise or service displays and signs could be practiced and experienced. Equipment would include a variety of small display fixtures, draping materials, paper, sign paints, shadow boxes, and a sink with counter space.

Pupil-Teacher Conference Center: Where the planning for study and work activities with an individual or a small group could take place. Equipment would include a teacher's desk and chair, a small table, two-drawer steel file, book shelving, and a couple of chairs.

Table 17.7 (Continued)

Retoolability/Flexibility:	As much as possible, the equipment which is needed and which is provided for each of these centers should be planned so that it can be rolled or otherwise moved into storage units along the walls or replaced as business methods change.
Remarks:	The students' exposure to the activities in this space will be less dependent upon quarter hours and clock scheduling than upon his ability to grasp the essence and meaning of the activities involved. The space should be designed so that the student can discover concepts and generalizations as well as allow the student to evaluate and test his progress. The entire space should be designed for room-darkening and audio-visual presentations.

CHAPTER XVIII

FACILITIES FOR PERSONAL SERVICES AND RELATED AREAS

Introduction

Home Management and Child Care curricula constitute the major emphasis in the personal services occupational area. College personnel are expected to be involved in these programs to the extents indicated in Table 18.1.

Table 18.1: College Personnel Associated with the Personal Services Occupational Area for the South Campus of Seattle Community College

	DAY PROGRAMS		OTHER PROGRAMS[a]	
PROGRAM	Faculty	Students	Faculty[b]	Students[b]
Home Management	3	60	2	60
Child Care	2	30	0	0

[a] Occupational Extension, Adult General, College Parallel

[b] FTE

A summary of the total facility needs required to implement these programs is given in Table 18.2. Because of the nature of these programs and their facilities, it is suggested that the facilities for this area be physically associated with the social studies area.

Table 18.2: Summary of Spaces Needed to Implement the Instructional Program in Personal Services and Related Occupations for the South Campus of Seattle Community College

Space Description	Number of Units	Approximate Total Space (Square Feet)
Auditorium/Lecture Theatre	-	(a)
General Purpose Classrooms	1	(a)
Special Purpose Classrooms	1	720
Seminar Rooms	1	(a)
Laboratory Areas	3	2,500
Administrative Offices	1	(a)
Staff Offices	4	(a)
Evening Staff Offices	2	(a)
Toilet Areas	2	110
Student Study Lounges	-	-
Faculty Lounges	-	-
Staff Workroom	1	150
Student Locker Areas	1	60
Storage Supporting Instruction	4	750
Other (including general storage, custodial services, etc.)	-	180
TOTAL		4,470

(a) Requirements are included elsewhere in this Report.

General relationships among the facilities of this area are shown in Figure 18.1; the relationships between the facilities for this area and other facilities on campus are indicated in Figure 18.2.

Philosophy and Objectives

Two major educational streams, Home Management and Child Care, are included in the programs of instruction conducted in this area. The area is one of those several College units which offer educational experiences especially designed to serve the needs

Figure 18.1: Relationship Among Facilities for Personal Services and Related Occupations

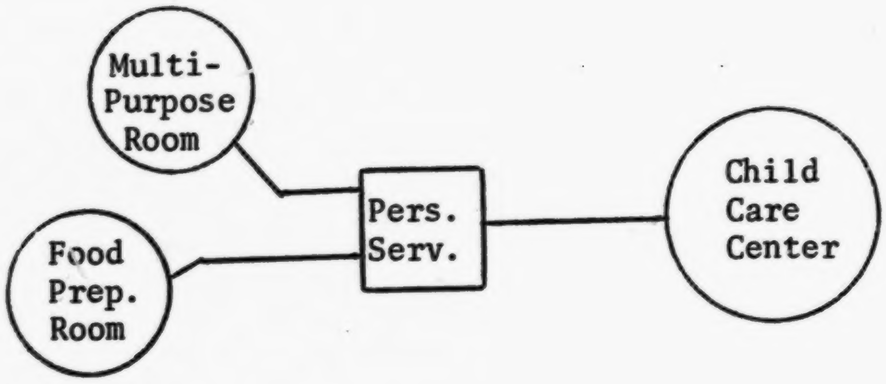
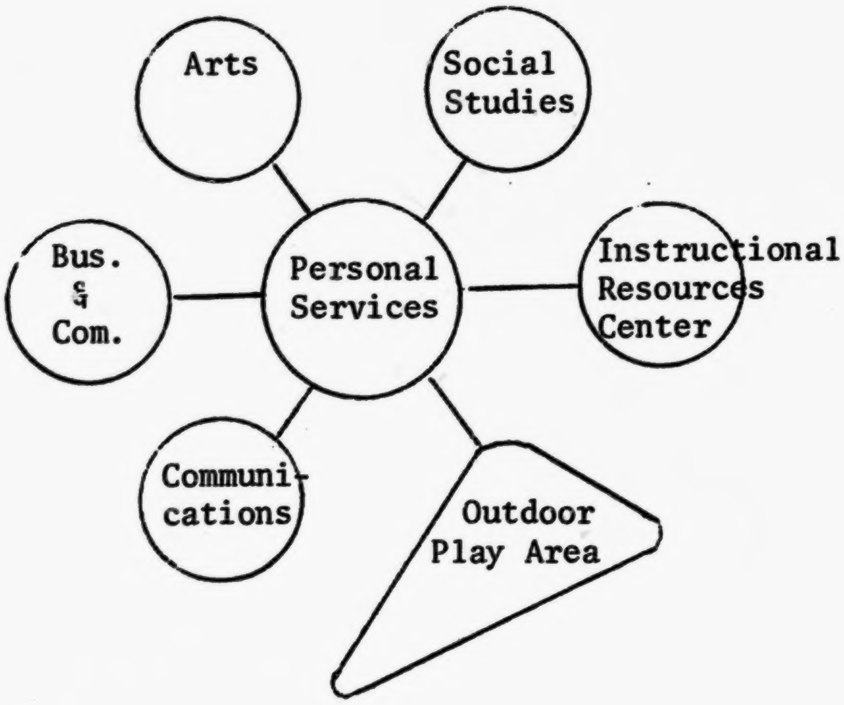


Figure 18.2: Relationship Between Facilities for Personal Services and other Facilities on Campus



of women in the community. The purpose of the Home Management Program is to provide for individuals enrolled in Secretarial Science or other occupational specialties a set of parallel learning experiences which will prepare such individuals for the successful combination of two careers, one in the home, the other, outside. The purpose of the Child Care Program is to train individuals, including parents, in the disciplines of child psychology and child development and to give practical experiences in this field by means of observation of, and participation in, child care activities.

It is expected that activities in the general area of child care and in related areas will be increased in the future. Instructional programs related to preparation of semi-professional teachers' assistants at various levels have been inaugurated in some community colleges; Seattle Community College, in the future, may well devise programs for such training. All courses in the occupational area of personal services are available for elective credit to any member of the student body. In a similar manner, the facilities associated with this area are shared facilities in that students from many other occupational areas and from the College Parallel Program utilize the facilities. This College unit provides opportunities for personal improvement and satisfies personal interests of a wide range of students.

Curricula and Courses

The curricula include the following:

1. Home Management
2. Child Care

The courses which appear in the above curricula include the following:

1. Clothing Construction (3 courses)
2. Food Preparation
3. Nutrition
4. Housing for the Family
5. Family Finance
6. Equipping the Home
7. Personal and Family Food Management
8. Interpersonal Relationships (3 courses)
9. Educational Psychology
10. Study of the Individual Child
11. Principles of Preschool Education

12. Child Development
13. Preschool Curriculum
14. Language Arts for Young Children
15. Music and Art for Young Children
16. Practice Teaching in the Preschool

Curricular areas which may be allied with these areas of specialization include the following:

1. Secretarial Science
2. Marketing and Distribution
3. Business Management, Accounting, and Finance
4. Adult General Education

Teaching and Learning Activities

Teacher activities include lecturing, demonstrating devices and techniques, using chalk board, using visuals and audio-visuals, using the overhead projector, answering questions, giving individual help, leading discussions, supervising performance and information tests, supervising practice in laboratories, administering the Child Care Center, and supervising practice teachers in the Child Care Center.

Student activities include listening to lectures; taking notes; observing demonstrations, visuals and audio-visuals; asking questions; participating in discussions; sewing; cooking; practicing use of devices and techniques; working on individual projects; working as members of a team in projects; taking performance and information tests; observing activities in the Child Care Center; and practice teaching in the Child Care Center.

Student Groups

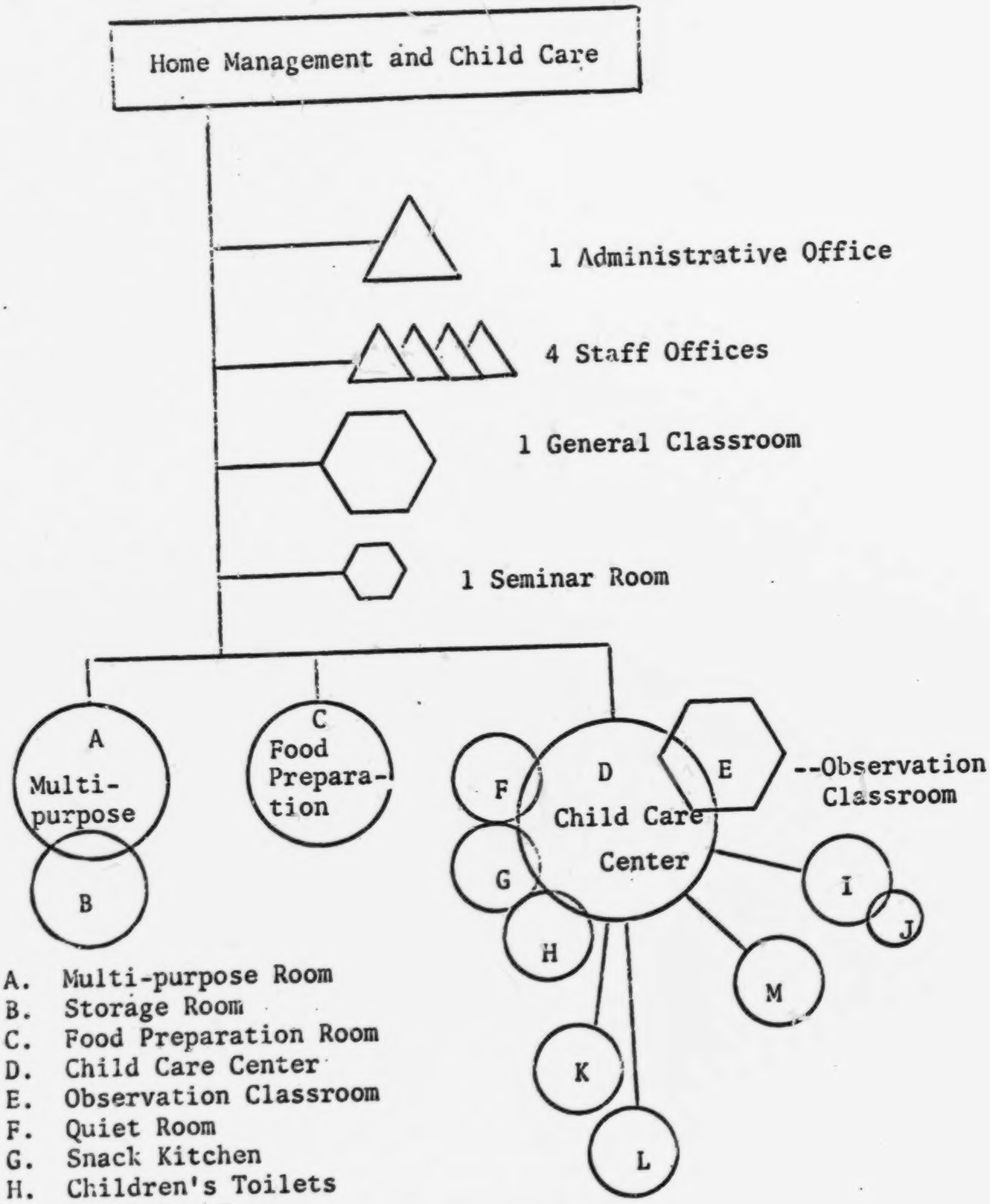
Class sizes are expected to be 18 students in all courses. It will probably prove feasible to schedule 36 students in purely classroom activities with this section split into two 18-student subgroups for laboratory activities. The clientele of the programs in Home Management is expected to consist primarily of young women; however, all age groups and both sexes have been represented in previous classes. The clientele of the programs in Child Care is expected to form a widely heterogeneous group with respect to age, experience, and ability levels, but is expected to be uniformly women.

Space Components of the Instructional Program

Figure 18.3 shows the number, type and relationships of spaces suggested to implement the instructional program. It will be noted that an administrative office, four staff offices, one classroom, one seminar room, and four specialized spaces have been recommended for this area. The specialized areas include a multi-purpose room with storage, a food preparation room, a child care center, and a child care observation classroom. The Child Care Center is a highly specialized facility. Its major purpose is to teach adults how to care effectively for preschool children. To accomplish this major purpose, children will be needed in this laboratory. Hence, a secondary purpose, the care of the children of College students while such students (young mothers) attend classes at the College, is also served. Many young women can thus profit from an experience which might otherwise be denied them. This Center should be a facility unit unto itself. Two factors seem to dictate this: (1) the nature of the clientele (the children) housed in the facility, and (2) a perceived need to expand this facility greatly in the future.

Table 18.3 presents some details of specialized spaces.

Figure 18.3. Spaces Needed to Implement the Programs of Instruction in Home Management and Child Care



A. Multi-purpose Room
B. Storage Room
C. Food Preparation Room
D. Child Care Center
E. Observation Classroom
F. Quiet Room
G. Snack Kitchen
H. Children's Toilets
I. Isolation Room
J. Isolation Toilets
K. Outdoor Play Area
L. Pickup and Delivery Area
M. Staff Work Room

Table 18.3: Comments on Some Space Characteristics for Personal Services and Related Occupations for the South Campus of Seattle Community College

A. Multi-Purpose Room

Approximate Area:	1,200 square feet
Student Stations:	18
Usage:	Housing for the family, equipping the home, clothing construction, clothing selection, personal and family food management, and personal grooming.
Furniture and Equipment:	18 portable sewing machines, 18 folding tables for sewing machines, 3 cutting tables, 4 ironing boards, 4 steam irons, 4 sleeve boards, 4 skirt boards, 4 pressing hams, triple mirror, modular tables, laundry facilities (to be closed off), furniture for interior decoration (to be stored), 18 chairs, and 1 instructor's station.
Remarks:	Electric service for sewing machines; electric outlets at many locations in room; heavy equipment on dollies, storage area contiguous and concealable; plumbing for laundry facilities; storage for student projects.

B. Storage Room

Approximate Area:	300 square feet
Usage:	Storage for equipment used in various activities of Home Management.
Remarks:	Specialized spaces for each equipment item. Consult with appropriate faculty members after preliminary plans are drawn.

C. Food Preparation Room

Approximate Area:	400 square feet
Student Stations:	18
Usage:	Food preparation and personal and family food management.

Table 18.3 (Continued)

Furniture and Equipment:	5 unit kitchens, instructor's station; unit kitchens include range, double sink, base and wall cabinets, table and 4 chairs, and movable base cabinets of adjustable height for simulating different kitchen layouts. Room also contains 2 refrigerators, 1 freezer, 1 garbage disposal, 1 dishwasher, chalk board, peg board, cork board, and RAMP services. Provide special in-room storage for foodstuffs and for tall equipment items.
Remarks:	Ventilation, cooling, electric and gas service, plumbing, and grease-resistant floor.

D. Child Care Center--Main Indoor Area

Approximate Area:	900 square feet
Student Stations:	46 (40 observers, 6 interns)
Usage:	Laboratory for complete child care program.
Furniture and Equipment:	6 tables, 16 chairs, 4 easels, cupboard with sink, piano, dolls and doll furniture, unit blocks, building blocks, house gym, floor train, and other toys. Storage for movable items to be provided in cabinets which will form a room divider. Furniture scaled for children of preschool age.
Remarks:	Area to be divisible into 3 areas: "soft", "hard" and "wet". Soft area carpeted, for quiet activities. Hard area for active play with paints, for dancing, and for building with blocks. Wet area (where the sink is) for water play. This area should have a floor drain. Provision for closed-circuit TV initiation from this area.

E. Observation Classroom

Approximate Area:	720 square feet
Student Stations:	40

Table 18.3 (Continued)

Usage:	Observation of activities taking place in Child Care Center.
Remarks:	"One-way" glass wall separation from Child Care Center. For further edspecs, see "General Purpose Classrooms".
F. Quiet Room	
Approximate Area:	100 square feet
Usage:	For children to rest.
Furniture and Equipment:	2 double-bunk beds and 3 chairs.
Remarks:	Carpeted floor and a door with glass panels.
G. Snack Kitchen	
Approximate Area:	80 square feet
Usage:	Preparation of snacks for children and food play for children.
Furniture and Equipment:	Range, refrigerator, sink and storage cabinets.
Remarks:	May be pullman kitchen; provide low serving counter to adjacent room; provide adequate storage for simple foodstuffs.
H. Children's Toilet	
Approximate Area:	80 square feet
Furniture and Equipment:	4 water closets, 4 lavatories, and drinking fountain.
Remarks:	Low height lavatories and fountain. Segregation by sex is not necessary.
I. Isolation Room	
Approximate Area:	60 square feet
Usage:	Isolation for child who becomes ill after arriving at Center.

Table 18.3 (Continued)

Furniture and Equipment:	1 bed and 1 chair.
Remarks:	Door with glass panel; contiguous to isolation toilet; nearby to exterior so that egress of sick child can be effected without exposing others.

J. Isolation Toilet

Approximate Area:	30 square feet
Usage:	For children in Isolation Room only.
Furniture and Equipment:	1 water closet and 1 lavatory.
Remarks:	Contiguous to Isolation Room; ingress only from Isolation Room.

K. Outdoor Play Area

Approximate Area:	1,600 square feet of which 600 square feet is covered
Usage:	Outdoor activities for children.
Furniture and Equipment:	Parallel bars, jungle gym, swings, see-saw, and other outdoor toys; paved area and grassed area; sandbox; and shallow wading pool.
Remarks:	Fenced in with chain-link fencing; egress only to Child Care Center; outdoor storage; covered area heated by infrared or equivalent.

L. Pick-up and Delivery Area

Usage:	For children arriving and departing via bus or parents' automobiles.
Remarks:	Traffic safety considerations.

M. Staff Workroom

Approximate Area:	150 square feet
Usage:	Preparation of toys, training aids, etc.

Table 18.3 (Continued)

Furniture and Equipment:	4 feet by 6 feet table, 6 chairs, bookcase, and storage in counters and wall cabinets.

CHAPTER XIX

AUTOMOTIVE, MECHANICAL AND RELATED OCCUPATIONS FACILITIES

Introduction

The Automotive, Mechanical and Related Occupations area is projected to involve College personnel to the extents indicated in Table 19.1. A summary of the total facility needs to implement the instructional programs in this area is given in Table 19.2. Details of the programs and their related specialized facility needs are given in subsequent sections of this chapter.

Table 19.1: College Personnel Associated with the Automotive, Mechanical and Related Occupations Area for the South Campus of Seattle Community College

	DAY PROGRAMS		OTHER PROGRAMS[a]	
PROGRAM	Faculty	Students	Faculty[b]	Students[b]
Automotive Technology	3	75	-	-
Automotive Machinist	6	150	10	200
Automotive Service	1	25	-	-

[a] Occupational Extension, Apprenticeship, Adult General

[b] FTE

Table 19.2: Summary of Spaces Needed to Implement the Instructional Program in Automotive, Mechanical and Related Occupations

Space Description	Number of Units	Approximate Total Space (Square Feet)
Auditorium/Lecture Theatre	-	(a)
General Purpose Classroom	1	(a)
Special Purpose Classrooms	8	(a)
Seminar Rooms	-	(a)
Single-Use Laboratory Areas	11	15,900
Administrative Office	1	(a)
Reception Area	1	(a)
Staff Offices	10	(a)
Evening Staff Offices	10	(a)
Toilet Areas	2	(a)
Student Study Lounge	1	200
Faculty Lounges	-	(a)
Faculty Workrooms	-	(a)
Student Locker Areas	-	1,250
Storage Supporting Instruction	5	1,450
Paint Room	1	500
Other (including general storage, custodial services, etc.)	4	(a)
TOTAL		19,300

(a) Requirements are included elsewhere in this Report.

Philosophy and Objectives

The several instructional programs in the Automotive, Mechanical and Related Occupations area have these objectives:

1. To prepare highly skilled technicians to render important supporting services either to professional engineers and scientists working in automotive areas, or to technical managers in automotive enterprise; and/or

2. To prepare individuals for entry-level employment in various occupational specialties within the automotive manufacturing, maintenance and service and repair industries; or
3. To enable individuals, through occupational extension study, to augment their occupational competencies; or
4. To allow individuals to participate in ongoing apprenticeship programs of study.

Associate Degree, Diploma, Certificate, and Apprentice programs are planned. Because of the diversity of offerings within this College unit, it is expected that students can be counseled into programs which are in their area of interest and appropriate to their abilities, thus maximizing the educational opportunities for all. Although the characteristics of the students in these programs will vary widely, counseling will tend to make homogeneous the groupings within the various individual educational streams.

Curricula and Courses

The curricula recommended for this unit of the College includes the following:

1. Automotive Engineering Technology
2. Automotive Machinist
3. Automotive Rebuilding and Refinishing
4. Service Station Management
5. Service Station Attendant
6. Occupational Extension (short courses)
7. Apprentice-Related

It is also possible that this College unit can offer the introductory general and technical subject matter necessary to prepare students for a wide range of specialized occupations which are related to those just mentioned. It is highly recommended that such offerings be made to the extent of the College's resources.

It is not considered feasible for the College to offer, at high levels of specificity, the skills training and supporting classwork for all occupations. It _is_ appropriate, however, that the College offer a comprehensive program of fundamental, generalizable educational experiences which are preparatory for subsequent further education or application. It is most appropriate that the College coordinate its activities with the activities of many other agencies in order to maximize the educational opportunity for students; however, it is essential that the outside agencies involved cooperate sympathetically with the College in order to bring about such a coordinated program. It is also essential that the College work toward the creation of a climate in which such a cooperative effort can flourish.

Among the highly specialized occupations for which the Automotive, Mechanical and Related Occupations area may offer, the fundamental, generalizable educational experiences are diesel mechanic, marine engine mechanic, heavy-duty automotive equipment repairman, power train mechanic, marine diesel mechanic, etc.

Courses which may appear in the curricula recommended include the following:

1. Familiarization and Related Skills
2. Running Gear Units
3. Engines
4. Brakes
5. Power Transmission Units
6. Diesel Fuel Systems
7. Body Units
8. Automatic Transmissions
9. Trouble Shooting
10. Fuel Systems
11. Electrical Systems
12. Automotive Shop Applications
13. Automotive Nomenclature and Manuals
14. Welding Applications
15. Metal Characteristics
16. Upholstery
17. Body Services
18. Sheet Metal and Body Alignment
19. Metal Straightening
20. Panel Replacement
21. Unit Body Frame Straightening
22. Painting and Preparation Procedures
23. Estimating Damage
24. Shop Operation and Personnel Problems
25. Laboratory Practice in Body Rebuilding
26. Service Station Procedures

Curricular areas closely related to this unit of the College include the following:

1. Mathematics
2. Physics
3. Chemistry
4. Communications

5. Drafting
6. Metals shop
7. General education
8. Business management

Teaching and Learning Activities

Teacher activities will include lecturing; answering questions; leading discussions; demonstrating devices and techniques; using overhead filmstrip, slide, opaque and 16 mm projectors; giving individual help in laboratories; supervising student performance in laboratories; issuing and receiving equipment; preparing instructional materials; and giving performance and information tests. Student activities include listening to lectures, taking notes, participating in discussions, observing demonstrations, observing visuals and audio-visuals, working on individual and team projects, learning by discovery methods, using programmed text materials, developing proficiency in manual skills, and taking performance and information tests.

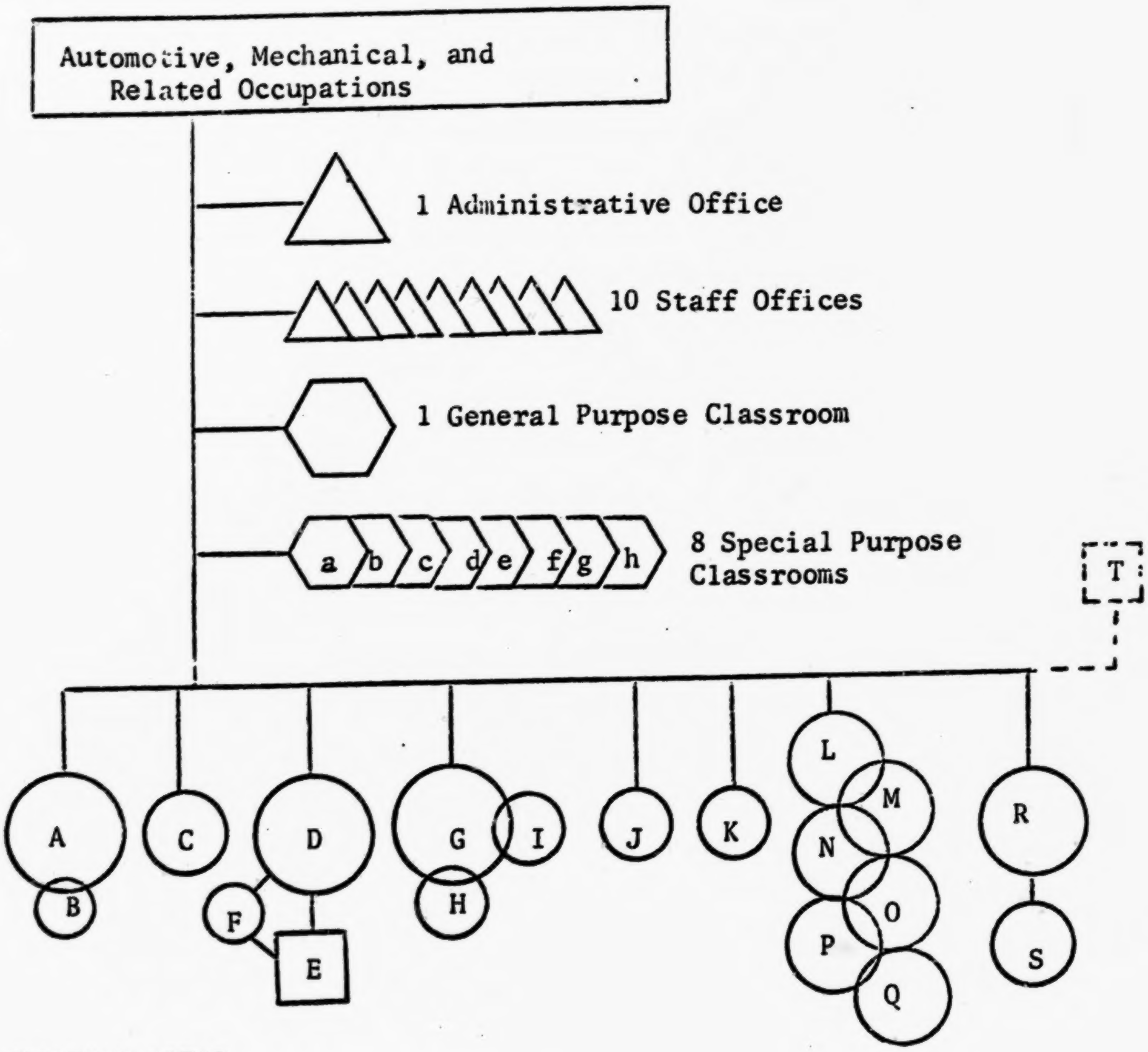
Student Groups

Class sizes are expected to be normally 15 students. Seldom is it contemplated combining classes to form groups larger than this. The student clientele is expected to be largely young men; while opportunities exist for all age levels, younger men are expected to be attracted most frequently into the programs. Women and older men are not expected to enroll.

Space Components of the Instructional Program

Figure 19.1 shows the number and type of spaces needed to implement the primary instructional program of the Automotive, Mechanical and Related Occupations area. Figure 19.2 shows the general relationship of spaces within the facilities for Automotive, Mechanical and Related Occupations. Figure 19.3 shows the relationship of facilities for Automotive, Mechanical and Related Occupations to other facilities on campus. Table 19.3 gives details of the specialized spaces associated with this College unit.

Figure 19.1: Spaces Needed to Implement the Instructional Program in Automotive, Mechanical, and Related Occupations


Automotive, Mechanical, and Related Occupations
1 Administrative Office
10 Staff Offices
1 General Purpose Classroom
8 Special Purpose Classrooms
a
b
c
d
e
f
g
h
T
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S

LABORATORY AREAS

A. Automotive Shop
B. Storage
C. Locker/Shower Area
D. Heavy Duty Shop
E. Heavy Duty Ramp
F. Storage
G. Body Rebuilding Shop
H. Paint Room
I. Storage
J. Central Tool Room
K. Technical Library

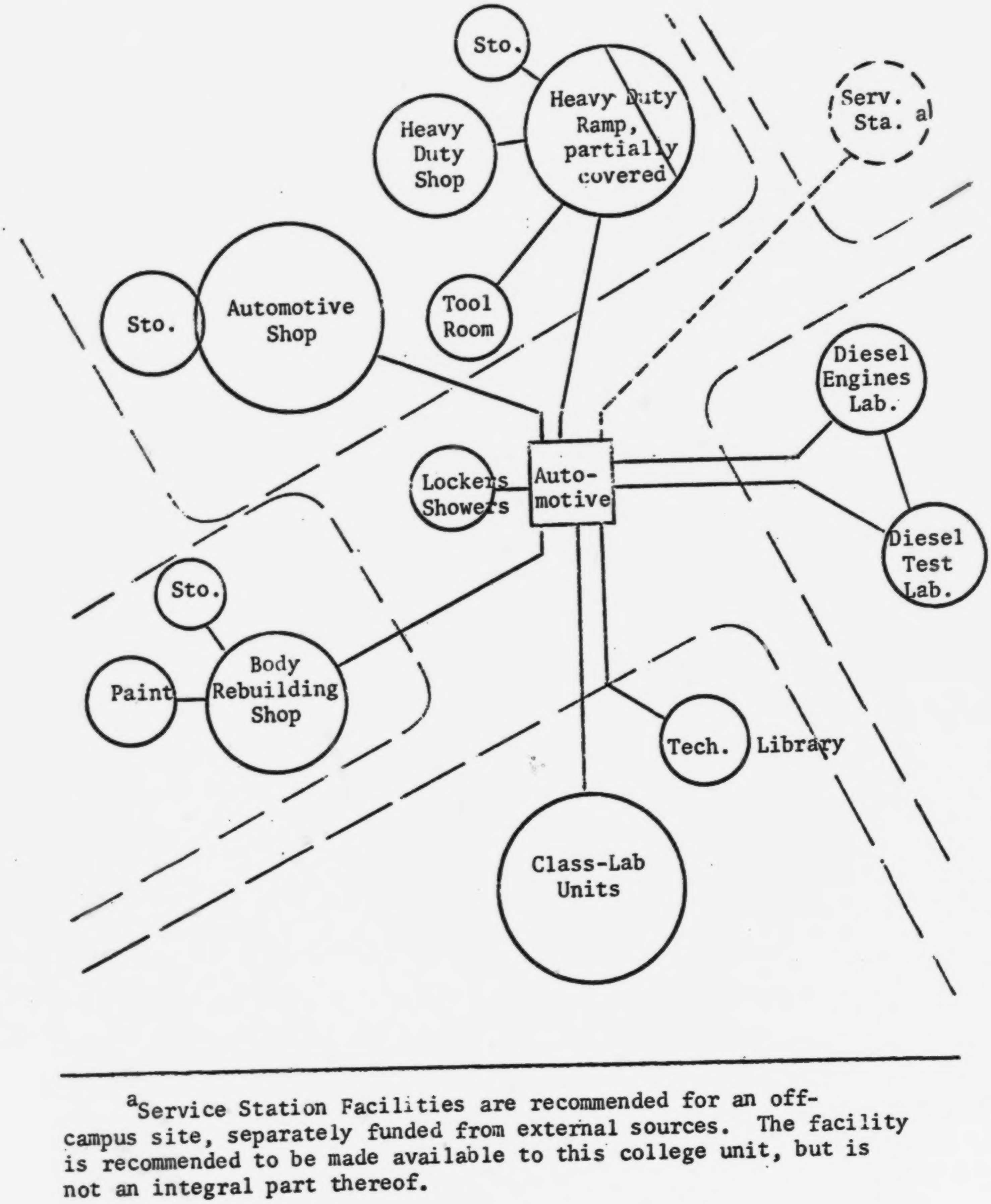
L. Familiarization Lab
M. Electrical and Carburetion Lab
N. Running Gear Lab
O. Gasoline Engines Lab
P. Power Transmission Lab
Q. Automatic Transmissions Lab
R. Diesel Engines Lab
S. Diesel Test Lab
T. Service Station

CLASSROOMS

a. Familiarization
b. Electrical/Carburetion
c. Running Gear
d. Gasoline Engines

e. Power Transmission
f. Automatic Transmissions
g. HD Classroom (Diesel)
h. Body Rebuilding Classroom

Figure 19.2: General Relationship of Spaces Within the Facilities for Automotive, Mechanical and Related Occupations



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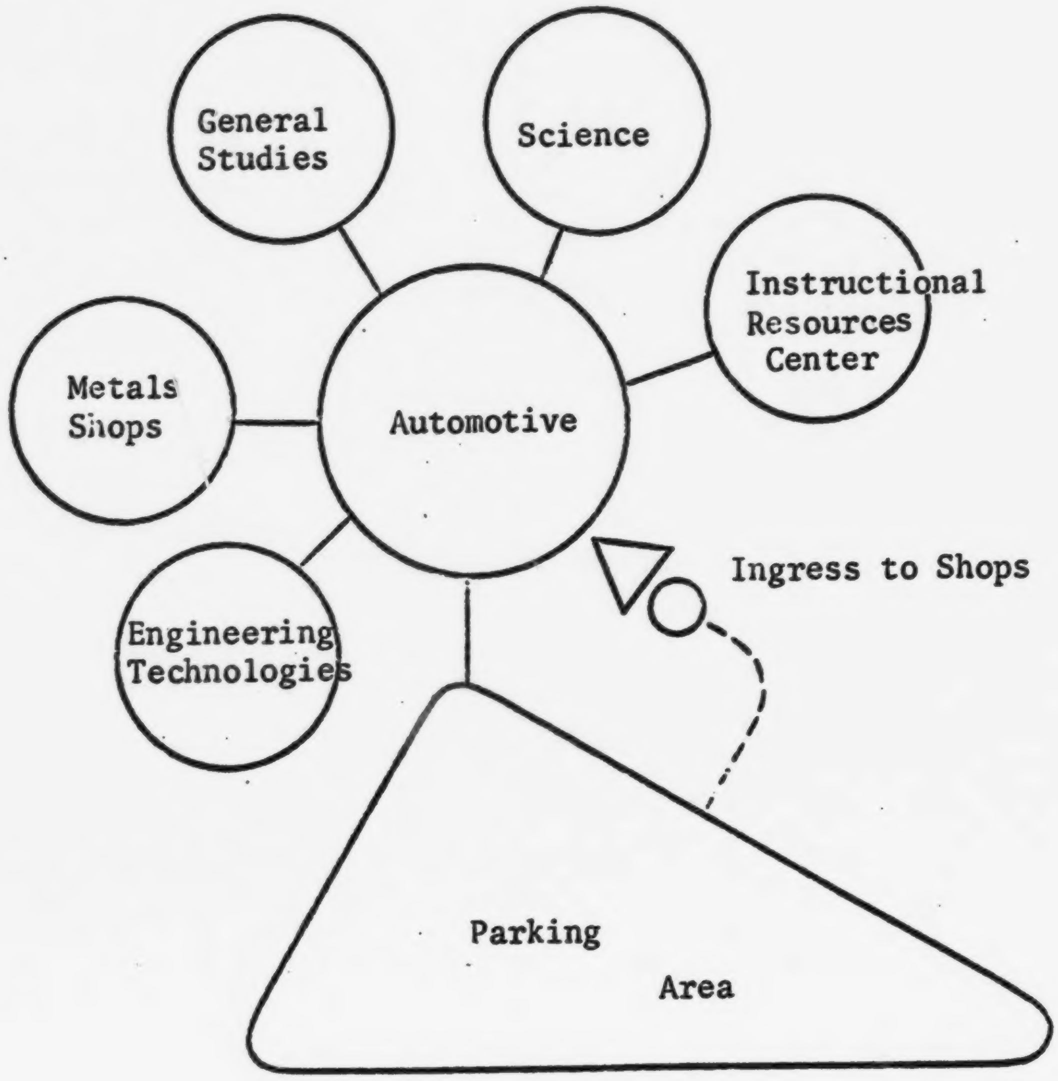
[a] Service Station Facilities are recommended for an off-campus site, separately funded from external sources. The facility is recommended to be made available to this college unit, but is not an integral part thereof.

Figure 19.3: Relationship of Facilities for Automotive, Mechanical and Related Occupations to Other Facilities on Campus



All the facilities suggested are to be regarded as shared facilities, in the sense that this College unit will offer service courses for a number of other areas. Students from other areas are expected to enroll in some courses here for both elective and required credit.

Space recommendations for these programs have been made on the basis of the basic philosophical principle that the major responsibilities of the College shall be: (1) to provide fundamental, generalizable educational experience which applies to a wide spectrum of occupational specialities, and (2) to coordinate other learning experiences--possibly off campus--which are related to individual students' goals. Work-study, internship, and other experiences are expected to supplement the education which students receive in this unit of the College. The spaces shown in Figure 19.1 and described in Table 19.3 were recommended on the basis of such an expectation.

Table 19.3: Comments on Some Space Characteristics for Automotive, Mechanical and Related Occupations for the South Campus of Seattle Community College

A. Automotive Shop

Approximate Area:	3,000 square feet
Student Stations:	15/30
Usage:	Laboratory practice for advanced students, area for demonstration, laboratory for trouble-shooting, on-campus instruction in Service Station Attendant programs, and wash and preparation of autos for use in other laboratories.
Furniture and Equipment:	6 automobile stalls, including 2 with hydraulic lifts (post hoists), and 1 with car wash facilities; 9 work bays, approximately 8 feet by 8 feet, with specialized tools for: (a) radiator repair, (b) steam cleaning, (c) welding, (d) parts cleaning by solvent, (e) battery test and change, (f) alignment, (g) dynamometer, (h) tire change and repair, and (i) engine repair; oil and solvent dispensers; parts cleaner; arc welder and gas welder; cam, crankshaft and valve

Table 19.3 (Continued)

	grinders; lathe; engine trouble diagnosis equipment; drill press; rod aligner; brake drum lathe; oscilloscopes; tire changer; wheel balancer; and rail and winch.
Remarks:	Uniform high-level lighting (70 footcandles); adequate ventilation; ingress to the 6 auto stalls, preferably from outside and by means of overhead garage doors; 15-foot ceiling clearance; electric service outlets on 5-foot centers; easily cleanable floor with drain; heavy floor loading expected. This is an area for advanced practice as well as instruction. This area should be pace-setting for such College facilities. Floor area should be essentially uninterrupted by columns or bearing partitions.

B. Storage for Automotive Shop

Approximate Area:	200 square feet
Usage:	Storage of multi-use, portable items employed in instruction (does not include tool storage); supplements storage spaces at work stations (in benches, on benches, and on walls) in the automotive shop.
Remarks:	Lock-up capability, convenient access to automotive shop, both shelf and floor storage, some items stored will be on casters.

C. Shower/Locker Area

Approximate Area:	1,250 square feet divided into: shower--200 square feet, dressing room--100 square feet, toilets--150 square feet, lockers--800 square feet.
Usage:	Students and staff clean up after shop or laboratory sessions; storage of laboratory uniforms and/or street clothes.

Table 19.3 (Continued)

Furniture and Equipment:	3 multi-head showers in shower area, benches and coat hangers for dressing, 5 sets of toilet facilities, and 200 student lockers.
Remarks:	Recommend 4 areas for: (a) shower, (b) dressing, (c) toilet, and (d) lockers; ceramic tile throughout; lockers to hold street clothes while students work in laboratories, work clothes at other times; ingress to toilet area both from shower/dressing/locker and from laboratories/shops/halls.

D. Heavy-Duty Indoor Shop

Approximate Area:	2,400 square feet
Student Stations:	15
Usage:	Internal parking for 1 item of heavy duty automotive equipment, advanced instruction in repair and service of heavy-duty machinery, and demonstrations.
Furniture and Equipment:	Engine stand, dynamometer, parts cleaner, hot tank, welding station, magnafluxing machine, press, tire changer, drum lathe, crane, and hoist.
Remarks:	Uniform high-level lighting (70 footcandles), minimum 15-foot ceiling clearance, adequate ventilation, heavy floor loading expected, easily cleanable floor. This is an area for demonstrating diagnostic procedures, systems analysis, component disassembly, and assembly. Attempt innovations in handling techniques for equipment. This is a "high-visibility" area.

E. Heavy-Duty Outdoor Shop

Approximate Area:	1,500 square feet covered space, 10,000 square feet of parking with driveway access for maneuvering.
Usage:	Parking for heavy-duty equipment; cleaning facilities, including steam; and disassembly and assembly of mechanical supporting systems.

Table 19.3 (Continued)

Remarks:	Partially-covered area to provide for rain shelter, storage room accessible to this outdoor area, ramp for delivery of equipment from low-boy trucks. This is not an area which is aesthetically pleasing to most individuals and, hence, should be isolated or concealed as much as possible. Crane should have access to this area from the indoor shop.
F. Storage for Heavy-Duty Spaces	
Approximate Area:	600 square feet
Usage:	Storage of components and mobile test equipment for heavy-duty machines.
Furniture and Equipment:	Extra-strength shelving, ceiling hooks, and floor storage.
Remarks:	Accessible from indoor and outdoor heavy-duty shops, accessible to heavy-duty shop crane and hoist, easily cleanable floor, floor to withstand impact loadings, lock-up capability.
G. Body Rebuilding Shop	
Approximate Area:	2,400 square feet
Student Stations:	30
Usage:	Body and fender rebuilding and repair, metals fabrication, and finishing.
Furniture and Equipment:	Frame machine, "pull dozer", welding station, 1 hydraulic lift, and 1 wash station.
Remarks:	Parking for 4 automobiles, with ingress and egress to outside (1 automobile parked on lift); high-level uniform lighting (70 footcandles); easily cleanable floor; in-room storage for special tools; and electric service outlets on 5-foot centers.

Table 19.3 (Continued)

H. Paint Room

Approximate Area:	500 square feet
Usage:	Spray painting of automobile bodies and baking enamels.
Furniture and Equipment:	Paint spray guns, infrared baking lights, and compressed air.
Remarks:	Spray room can be purchased as a ready-made unit, storage for paints should be readily accessible, electric service for heating application.

I. Storage for Body Rebuilding

Approximate Area:	100 square feet
Usage:	Storage of tools, paints, sandpaper, etc.; used in Body Rebuilding Shop.
Furniture and Equipment:	Shelving.
Remarks:	Storage of flammables requires special attention to the fire hazard involved. Room should be accessible to both the Body Rebuilding Shop and the Paint Room.

J. Central Tool Room

Approximate Area:	400 square feet
Usage:	Storage of tools and accessories for all shops.
Furniture and Equipment:	1 attendant's desk and chair; records system for tool checkout; cleaning for tools; and racks, shelves, hooks, drawers, etc., for tool storage.
Remarks:	Convenient to shops, lock-up capability, check-out counter.

Table 19.3 (Continued)

K. Technical Reference Area

Approximate Area:	150 square feet
Usage:	Storage of manuals and technical reference material.
Furniture and Equipment:	Shelving, file cabinets, two 4 feet by 6 feet tables, and 12 student chairs.
Remarks:	Tile floor recommended, recommended to be in laboratory zone but accessible to shops, and supervision by receptionist-secretary or other staff personnel.

L. Familiarization Class-Laboratory Unit

Approximate Area:	700 square feet
Student Stations:	15
Usage:	Instruction and practice in basic nomenclature, systems and components.
Furniture and Equipment:	Eight 2 feet by 5 feet tables, 15 student chairs, counter space along side wall, instructor station with 2 feet by 5 feet table, chalk board, cork board, student benches around periphery of room, student stools, in-room storage for automotive test equipment and components, space for bringing in training aids, 1 lathe, and 2 grinders.
Remarks:	RAMP services, provide clean writing surfaces on benches in laboratory.

M. Electrical-Carburetion Class-Laboratory Unit

Approximate Area:	1,200 square feet
Student Stations:	30
Usage:	Electrical systems for automotive equipment and principles of fuel systems for automotive equipment.

Table 19.3 (Continued)

Furniture and Equipment:	Eight 2 feet by 5 feet tables, 15 student chairs, counter space along 1 side wall, chalk board, cork board, instructor station with a 2 feet by 5 feet table, student benches around periphery of room and in center island, student stools, in-room storage for test equipment and components, space for bringing in training aids, and in-laboratory parking for 1 automobile with ingress from exterior.
Remarks:	RAMP services, provide clean writing surfaces in laboratory.

N. Running Gear Class-Laboratory Unit

Approximate Area:	700 square feet
Student Stations:	15
Usage:	Study of frames, shock absorbers, brakes, steering mechanisms, suspension systems, and wheels.
Furniture and Equipment:	Eight 2 feet by 5 feet tables, 15 student chairs, counter along side wall, chalk board, cork board, instructor station, student benches around periphery of room, student stools, in-room storage for test equipment and components, and in-room parking for one car with ingress from exteriors (suggested that car in this case may well be a skeleton, perhaps suspended from ceiling or cantilevered from wall).
Remarks:	RAMP services, provide clean writing surface for laboratory.

O. Gasoline Engines Class-Laboratory Unit

Approximate Area:	1,000 square feet
Student Stations:	30
Usage:	Principles of engine construction, maintenance, operation, and repair.

Table 19.3 (Continued)

Furniture and Equipment:	Eight 2 feet by 5 feet tables, 15 student chairs, counter along side wall, instructor station, chalk board, cork board, 6 engine stands, student benches around periphery of room, valve refacer, seat grinder, piston grinder, parts cleaner, rod aligner, and student stools.
Remarks:	RAMP services, clean writing surface on benches, in-room storage for components, under-floor exhaust system for engines, laboratory crane accessibility to laboratory, adequate ventilation in laboratory, isolate from other class-laboratory units because of noise.

P. Power Transmission Class-Laboratory Unit

Aproximate Area:	700 square feet
Student Stations:	15
Usage:	Instruction in clutches, bearing, gear trains, overdrives, universal joints, etc.
Furniture and Equipment:	Eight 2 feet by 5 feet tables, 15 student chairs, counter along side wall, chalk board, cork board, instructor's station, benches around periphery of room, student stools, in-room storage for components, space for training aids, and parking for 1 car (suggested a skeleton suspended or cantilevered).
Remarks:	RAMP services, provide clean writing surfaces on benches.

Q. Automatic Transmission Class-Laboratory Unit

Approximate Area:	700 square feet
Student Stations:	15
Usage:	Fluid flywheels, torque converters, planetary gear systems, and power shifting devices.

Table 19.3 (Continued)

Furniture and Equipment:	Eight 2 feet by 5 feet tables, 15 student chairs, counter along side wall, instructor station, chalk board, cork board, benches around periphery of room, student stools, 4 types of automatic transmissions (Hydromatic, Ford, Power-glide, Borg-Warner) on benches near room center, space for training aids to be brought in, and in-room storage for components.
Remarks:	RAMP services, provide clean writing surface on benches.

R. Diesel Engines Laboratory

Approximate Area:	1,000 square feet
Student Stations:	15
Usage:	Diesel engine principles.
Furniture and Equipment:	1 large diesel engine, 3 small diesel engines on test stands, student benches at periphery of room, 1 parts cleaner, 1 crane, 1 press, and in-room storage for components.
Remarks:	Under-floor exhaust system, ducted primary air to engines, 15-foot ceiling clearance, and easily cleanable floor. This is a "high-visibility" area. This is also an extremely noisy area and must be sound-isolated from other areas of campus.

S. Diesel Test Laboratory

Approximate Area:	600 square feet (2 sections of 300 square feet each)
Student Stations:	15
Usage:	Instruction in fuel injection systems for diesel engines.
Furniture and Equipment:	Benches around periphery of each section, student stools, cork board, paper tablet easel, 2 comparators, 2 calibration stands, 4 injector testers, 2 flow meters, and 1 parts cleaner.

Table 19.3 (Continued)

Remarks:	This must be a "clean" room, provide filtered air, door-hall-door ingress, and provide storage for "clean laboratory" clothing.

T. Service Station

(This facility may be separately funded and provided in an off-campus location. However, if a parking complex is made an integral part of the campus facilities, this station should be a part of the parking complex. In either case, the facility would provide internship for students in Service Station Management and Service Station Attendant programs. In either case, specifications are to be written for the productive function. Educational specifications are not presented.)

CHAPTER XX

FACILITIES OF AERONAUTICAL OCCUPATIONS

Philosophy and Objectives

The purpose of this curriculum is to prepare new workers for the repair and maintenance of aircraft, including both the airframe and the power plant. Some graduates also will be employable in other occupations in the aircraft industry which require similar abilities. In addition, it will serve to upgrade some persons already employed at lower levels in this field.

Full-time occupational preparatory students will complete their curriculums in three to six quarters depending upon the program in which they are enrolled. Completion of the airframe, power plant, or airframe and power programs of study qualifies the student to take the Federal Aeronautics Administration examination for airframe, power plant, or airframe and power plant mechanics. Some students may enroll part-time for portions of the preparatory curriculum to supplement other training and experience and thereby increase their qualification for licensing and employment.

Part-time students will also receive instruction during hours they are not employed for the purposes of updating and upgrading their job qualifications.

Curriculum

Certificate

Two curriculums, airframe mechanics and power plant mechanics, will be offered. Each curriculum will include approximately 1,080 hours of practical and related instruction. A typical day will be six hours in length with approximately three hours in the shop, two hours in the laboratory, and one hour in the classroom. These allocations of time will somewhat exceed the requirements for taking the FAA examination.

Diploma and/or Associate in Applied Science

The six-quarter curriculum leading to the Diploma or Associate in Applied Science Degree will include both airframe and power plant mechanics. The curriculum will include approximately 2,160 hours of technical specialty, allied supporting, and occupational general education instruction at the post-high school level. A typical day will be six hours in length with four hours in shop and laboratory activities and two hours of allied supporting and occupational general education.

Full-time students will be enrolled at the beginning of each quarter. Part-time students will enroll as their needs indicate when they can be accommodated in the student stations available.

Major Areas of Instruction
(Combines Shop and Related Instruction)

Airframe Mechanics (Certificate)	
Sheet metal and welding	240
Fabric, wood and plastics	150
Rigging and assembling	210
Hydraulics	240
Electrical (airframe and power plant)	240
TOTAL HOURS	1,080

Power Plant Mechanics (Certified)	
Basic power plant (including testing and lubrication)	360
Fuel and carburetion	240
Ignition and accessory	240
Propellers	240
TOTAL HOURS	1,080

Airframe Mechanics and Power Plant Mechanics (Diploma or Associate in Applied Science Program)	
Sheet metal and welding	180
Fabric, wood and plastics	120
Rigging and assembling	180
Hydraulics	180

Electrical (airframe and power plant)	240
Basic power plant (including testing and lubrication)	300
Fuel and carburetion	180
Ignition and accessory	180
Propellers	180
Allied supporting courses, i.e., applied mathematics, science, drafting	300
Occupational general education, i.e., communication skills and human relations	120
TOTAL HOURS	2,160

Teaching and Learning Activities

Teacher Activities

Shop teachers will demonstrate, explain, assign and supervise learning experiences consisting of individualized tasks. Various specialized shop areas will be used on a rotation basis employing the equipment and facilities required for the several aspects of the curriculum.

Related instruction in Certificate programs will be provided by the shop instructor and/or other qualified and vocationally certified instructors. This will include related mathematics, science and trade theory together with blueprint reading and sketching. The instructor will demonstrate and explain using three-dimension (mock-ups and models) and projected aids and the chalk board. Closed-circuit television will be used in connection with engine testing and other experiences where appropriate.

Allied supporting instruction for Diploma or Associate in Applied Science Degree programs will be provided by qualified and vocationally certified instructors. Examples of allied supporting courses are applied mathematics, applied science (physics and/or chemistry), and drafting. These allied supporting courses may or may not be taught by the airframe and power plant instructor. When the need for additional developmental instruction is identified, individualized instruction may be utilized.

Student Activities

Students will perform assigned tasks on mock-up, stationary and operational aircraft or components. This will include testing, repair and fabrication of parts. The term "operational" as used in reference to curriculum denotes actual aircraft and components belonging to, or on loan to, the College. It is anticipated that "live" commercial repair on campus will be limited in scope. The term "live" as used in curriculum refers to actual commercial repair. Additional "live" commercial educational experiences may be developed in cooperation with industry according to education and training needs. These experiences can be provided by field trips and cooperative "on-the-job" arrangements with industry.

Emerging Concepts and Developing Trends

Closed-circuit television is anticipated for demonstration purposes and for observation of power plants under test. It also may be used for group instruction.

Student Groups

Class Size

Shop instruction will be conducted in groups of approximately 15 students per instructor. Students enrolled in Certificate programs will normally spend 4½ hours per day in shop and laboratory activities and 1½ hours per day in related instruction. Diploma or Associate in Applied Science Degree students will normally spend 4 hours per day in shop and laboratory instruction and 2 hours per day in allied supporting and occupational general education courses. Related instruction for certificate-level programs will be taught by shop and/or other qualified and vocationally certified personnel. Allied supporting courses for Diploma or Associate in Applied Science Degree programs will be taught by qualified and vocationally certified personnel or shop instructors.

Grouping Techniques

Certificate

For shop and related instruction, students will be grouped on the basis of common needs in terms of where they started in the curriculum and the units satisfactorily completed. Both in airframe mechanics and in power plant mechanics, instruction will be cycled over a three-quarter period for each full-time student. Students will be regrouped each quarter on the basis of the units they have satisfactorily completed and the units needed to afford optimum progress in the curriculum and effective use of the facilities and instructional faculty.

Diploma or Associate in Applied Science Degree

For shop and related instruction, students will be grouped according to level of accomplishment, courses completed, and common needs. Students will be rescheduled each quarter on the basis of the courses they have satisfactorily completed and the courses needed to afford optimum progress in the curriculum and effective use of the facilities and instructional faculty.

Part-time students will enter groups when space is available on the basis of the units they need.

Characteristics of Students

Students will be high school graduates of both sexes (largely males) in ages ranging from 18 years upward through adulthood. Some students will be employed during hours they are not attending the College.

Attitudinal Development

Of primary importance in the development and implementation of an aeronautical curriculum is the necessity to motivate and effectively achieve within the student a strong sense of pride and excellence in workmanship and responsibility for the safety and lives of others.

The development of these attitudes has been effectively achieved in other FAA licensed institutions without (or with limited) use of commercial "live" repair as a part of the curriculum.

Highly qualified instructors can develop, in youth entering the aeronautical occupations, sound, responsible attitudes, i.e., pride and excellence in workmanship and responsibility for the safety and lives of others, without involving the student in "live" commercial experiences.

Instructional Aids, Equipment, and Furniture

Four major shop areas are required as follows:

1. Airframe Shop #1 and General Hangar Area: Operational aircraft used in this area will not exceed the size and space requirement of a late model Cessna 180 or a late model twin Beachcraft. Adequate space should be provided for 45 student stations, at a minimum of 116 square feet per student, and 3 instructor stations. Furniture and equipment is listed in Appendix A to provide for shop instruction in Sheet Metal, Welding, Fabric, Wood, Plastics, Rigging, and Assembling (with appropriate exhaust systems as required).

2. Airframe Shop #2: Component parts of operational aircraft will be housed in this area. Adequate space should be provided for 30 student stations at approximately 84 square feet per student and 2 instructor stations. Furniture and equipment is listed in Appendix A to provide for instruction in Hydraulics and Electrical (for both airframe and power plant).

   Special Airframe Space Requirements: Special facilities separated from, but included with, the above will be required as follows: Fabric Shop, Woodworking Shop, Hydraulics Area, and Dope Shop. (With appropriate storage facilities and exhaust systems as required.)

3. Power Plant Shop #1: Component parts of operational aircraft will be housed in this area. Adequate space should be provided for 30 student stations at approximately 84 square feet per student with 2 instructor stations. Furniture and equipment is listed in Appendix A to provide for instruction in Fuel and Carburetion, Ignition and Accessory Overhaul, and Instrument Reading and Calibrating.

4. Power Plant Shop #2: Component parts of operational aircraft will be housed in this area. Adequate space should be provided for 45 student stations at a minimum of 116 square feet per student and 3 instructor stations. Furniture and equipment is listed in Appendix A to provide for instruction in Basic Power Plant, Propellers, and Lubrication.

   Special Power Plant Space Requirements: Special facilities separated from, but included with, the above will be required as follows: Machine Shop; three separate, but nearby, Engine Test Cells (Jet and Piston); and separate, but nearby, covered and heated hangar areas for operational aircraft of the Cessna 180 or twin Beachcraft class.

Special requirements applying to all of the above major shop areas:

1. All shops on the ground floor.
2. Concrete floors, with pump, which can be flushed.
3. Hot and cold water supply to each shop and wash-up facility for students.
4. 8 feet wide by 10 feet high overhead doors from outside into Airframe Shop #2 and Power Plant Shops #1 and #2.
5. 40 feet wide by 20 feet high overhead door from outside into Airframe Shop #1 and hangar areas.
6. 600 square feet central tool and supply room (to be served by paid attendant) to serve four shops. Access door and serving counter for each shop.
7. 400 square feet central supply storage room.
8. 1,000 square feet central dead storage room, accessible for heavy or bulky components (engines, etc.).
9. Three test cells for jet and piston engines, separate from shops but nearby, with instrument control and observation decks. Must be sound suppressed and sufficiently isolated, with vertically vented airstream, exhaust and jet stream to permit operation of engines without undue disturbance to other instructional activities. Closed-circuit television and microphones should be wired to one related classroom.
10. Level of illumination in shops as provided in industrial practice for similar activities.
11. Compressed air and electrical supply to fixed and portable equipment dropped from overhead manifolds and busses.
12. 220V, three-phase current required in all four shops. It is estimated that a total of 1,000 amperes of such current will be needed for Airframe Shops #1 and #2 (combined) and a total of 1,000 amperes for Power Plant Shops #1 and #2 (combined).
13. Locked storage space for students' tool boxes to be provided in the base of benches. (Two boxes for each student station.)
14. Lockers for students' street clothing while in shop attire.

To accommodate the related and/or allied instruction, five classrooms will be required all day. Each should have a capacity of 20 students with the following equipment and provisions:

1. Chalk board, demonstration table, projection screen, and stand.
2. Ventilated darkening for slide, overhead and motion picture projection.
3. Sound control.
4. Closed-circuit television connected with camera and microphone in test cells (one room).

Figure 20.1 is a diagram showing the relationships of the various functional components of the Aeronautics curriculum.

Table 20.1 includes data on the major space components needed to serve the curriculum.

Figure 20.1: Facilities Relationships for the Aeronautics Curriculum

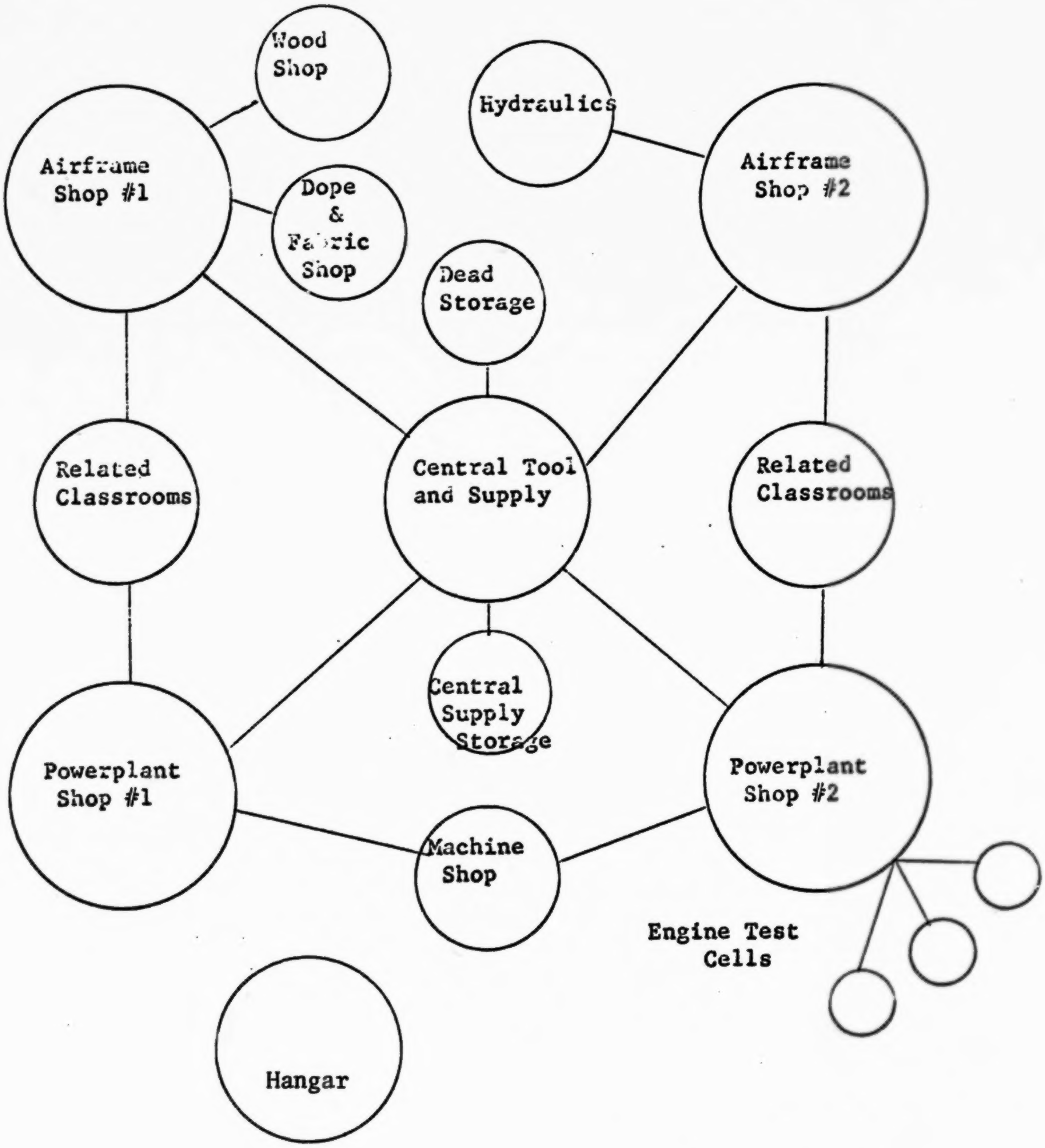


Table 20.1: Selected Characteristics of Space Components Required for the Aeronautics Curriculum for the South Campus of Seattle Community College

Space	Number of Student Stations	Approximate Square Feet	Major Functions
Airframe Shop #1	45	5,200	Sheet metal, welding, fabrics, wood, plastics, rigging, and assembly.
Airframe Shop #2	30	2,500	Hydraulics and electrical (airframe and power plant).
Power Plant Shop #1	30	2,500	Fuel and carburetion, ignition, and accessory. Overhaul (including instruments).
Power Plant Shop #2	45	5,200	Basic power plant (including testing), lubrication, and propellers.
Engine Test Cells	-	1,800	Testing jet and piston engines.
Dead Storage Area	-	1,000	Storage of heavy or bulky items.
Hangar Space	-	3,000	Storage of aircraft.
Central Tool and Supply Room	-	600	Storage of tools and supplies for all 4 shops.
Central Supply Storage	-	400	Storage of supplies.
Allied Supporting Classrooms (5)	100	(a)	-
TOTAL		22,200	

(a) Reported in Chapter VIII.

CHAPTER XXI

FOOD SERVICES AND RELATED OCCUPATIONS FACILITIES

Introduction

The instructional activities of the Food Services and Related Occupations area are projected to directly involve College personnel to the extents indicated in Table 21.1. The total program of this College unit, however, involves much more than its instructional activities, a matter which will be elaborated on later in this chapter.

A summary of the facilities needed to implement the instructional program is given in Table 21.2. In this table, the item "laboratories" should be interpreted as "kitchens".

Table 21.1: College Personnel Associated with the Food Services and Related Occupations Area for the South Campus of Seattle Community College

	DAY PROGRAMS		OTHER PROGRAMS[a]	
PROGRAM	Faculty	Students[c]	Faculty[b]	Students[b]
Hotel-Motel Management	-	25	-	-
Restaurant Management	-	25	-	-
Baking	2	40	1	20
Restaurant Cooking	2	40	1	20
Food Service	1	25	1	20
Commercial Food Preparation	2	25	1	20

[a] Includes Occupational Extension and Adult General Education.

[b] FTE

[c] Interns only; basic college work will be taken centrally, with an ongoing internship/work-study program at each of the College campuses.

Table 21.2: Summary of Spaces Needed to Implement the Instructional Programs in Food Services and Related Occupations

Space Description	Number of Units	Approximate Total Space (Square Feet)
Auditorium/Lecture Theatre	-	(a)
General Purpose Classroom	1	(a)
Seminar Rooms	-	(a)
Laboratory Areas	4	6,500
Administrative Office	1	(a)
Reception Area	1	(a)
Staff Offices	6	(a)
Evening Staff Offices	4	(a)
Toilet Areas	2	(a)
Student Study Lounges	-	-
Faculty Lounges	-	-
Faculty Workrooms	-	-
Student Locker Area	1	100
Storage Supporting Instruction	5	1,100
Other (including general storage, custodial services, etc.)	1	(a)
TOTAL		7,700

[a] Requirements are included elsewhere in this Report.

The Total Program

All College personnel will feel the impact of the program in Food Services and Related Occupations, for it is planned that this College unit will have responsibility not only for instruction in the food services area but also for all of the food services on campus.

The various food service outlets on the campus are designed for the primary purpose of service to the student clientele of the institution. Because the student population will be diversified in its eating habits and its tastes in foods, a variety of kinds of food outlets have been planned. The existence of this variety of food service outlets provides, incidentally, opportunity to give valuable instruction to students in the food service occupational area by offering them internship experiences in these various food stations. While such internship potential is certainly secondary to the primary purpose of providing service to students, the design of the food outlet stations and their supporting facilities hopefully will allow both purposes to be realized.

The Food Service Outlets

Figure 21.1 shows the kinds and number of food service outlets suggested for the College campus and indicates the relationship of the various teaching laboratories, i.e., kitchens, to such food service outlets. Detailed educational specifications will appear elsewhere in this Report for these food service outlets; however, since the nature of these outlets materially affect the nature of the facilities required to implement the instructional program in food services, some relevant comments are given here.

Table 21.3, for example, gives a summary of the type of food service outlets suggested for the campus, along with approximate space requirements, and the following paragraphs briefly describe these spaces.

Figure 21.1: Food Service Stations Suggested for Seattle Community College

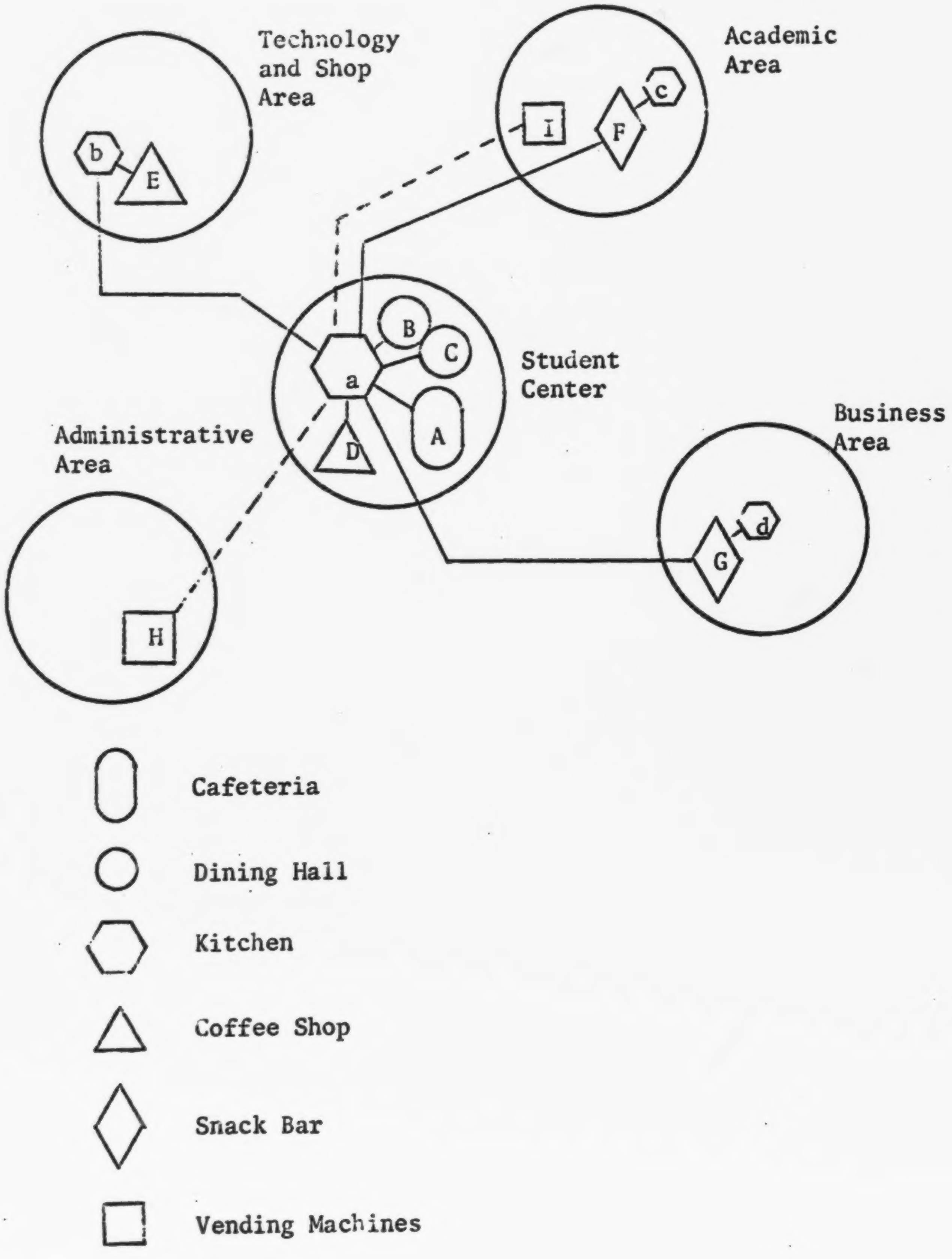


Table 21.3: Guidelines for Food Service Stations for the South Campus of Seattle Community College

Type of Station	Code (From Figure 21.2)	Possible Location	Seating Capacity	Approximate Area (Square Feet)
Cafeteria	A	Student Center	350	(a)
Dining Hall	B	Student Center	80	(a)[a]
Dining Hall	C	Student Center	60	(a)[a]
Coffee Shop	D	Student Center	40	(a)
Coffee Shop	E	Technology Area	40	800
Snack Bar	F	Academic Area	25	400
Snack Bar	G	Business Area	25	400
Vending Machines	H	Administration	-	200
Vending Machines	I	Academic Area	-	200

(a) Requirements are included elsewhere in this Report.

[a] It is recommended that these two areas be contiguous and be separated by movable partition walls in order that the combined areas may form a banquet hall with a capacity of approximately 300 seats.

Cafeteria

The cafeteria, located in the College Community Center, should provide a variety of seating arrangements. It is expected that approximately 1,500 students will use this facility for the noon meal, and 500 students will use this facility in the evenings. A maximum of 350 students is expected at any one time during the meal serving period; a fairly rapid turnover will permit the projected total student customers to be served. A "scramble" serving arrangement is recommended. Carpeting for the floors is highly recommended. It is essential that the total floor area be broken into smaller units by the use of planters, special arrangements of furniture, movable screens, etc., to enhance the quality of the environment. Air-conditioning is considered highly desirable.

Dining Halls

Two dining areas, contiguous but separable, have been suggested. One of these should be made available on reservation to student or faculty groups wishing to hold luncheon or dinner meetings on the campus; when not so engaged, it can be available for table service or additional cafeteria seating. The other dining room should be available for table service at every meal period. These two areas should be so arranged that they can be combined for use as a banquet hall. Both dining rooms should be carpeted and air-conditioned and should have capabilities for light control.

Coffee Shops

Coffee shops are visualized as providing a basic short-order menu consisting of salads, soups, sandwiches, desserts and beverages. The satellite kitchens which will service these coffee shops will consist mainly of the equipment for processing prepared foods. However, the coffee shops should have an atmosphere conducive to informal interactions between students. The decor should say, "linger, relax, talk". Flatware and other accessories similar to what is employed in the dining halls should be used rather than disposable utensils and plates such as are visualized for the snack bars.

Snack Bars

Snack bars are visualized as being primarily quick-service food stations. They should provide a basic short-order menu, perhaps more limited in scope than that of the coffee shops. They may employ paper plates and disposable utensils. They will feature stand-up dining, even though they may have a few seating spaces. The turnover rate of customers is expected to be great. Decor should be attractive and pleasant but should not be conducive to lingering.

Vending Machine Stations

Vending machine stations should be provided in at least two locations on campus, one in the academic area and the other in the administration area. These stations will not be manned nor should they necessarily provide for more than minimal seating. Hot and cold beverages, sandwiches, cookies, and candies will constitute their major merchandise.

Kitchens

The kitchens which support these food service outlets are teaching laboratories for this College unit and will be described in detail later in this chapter.

Implications for Administration

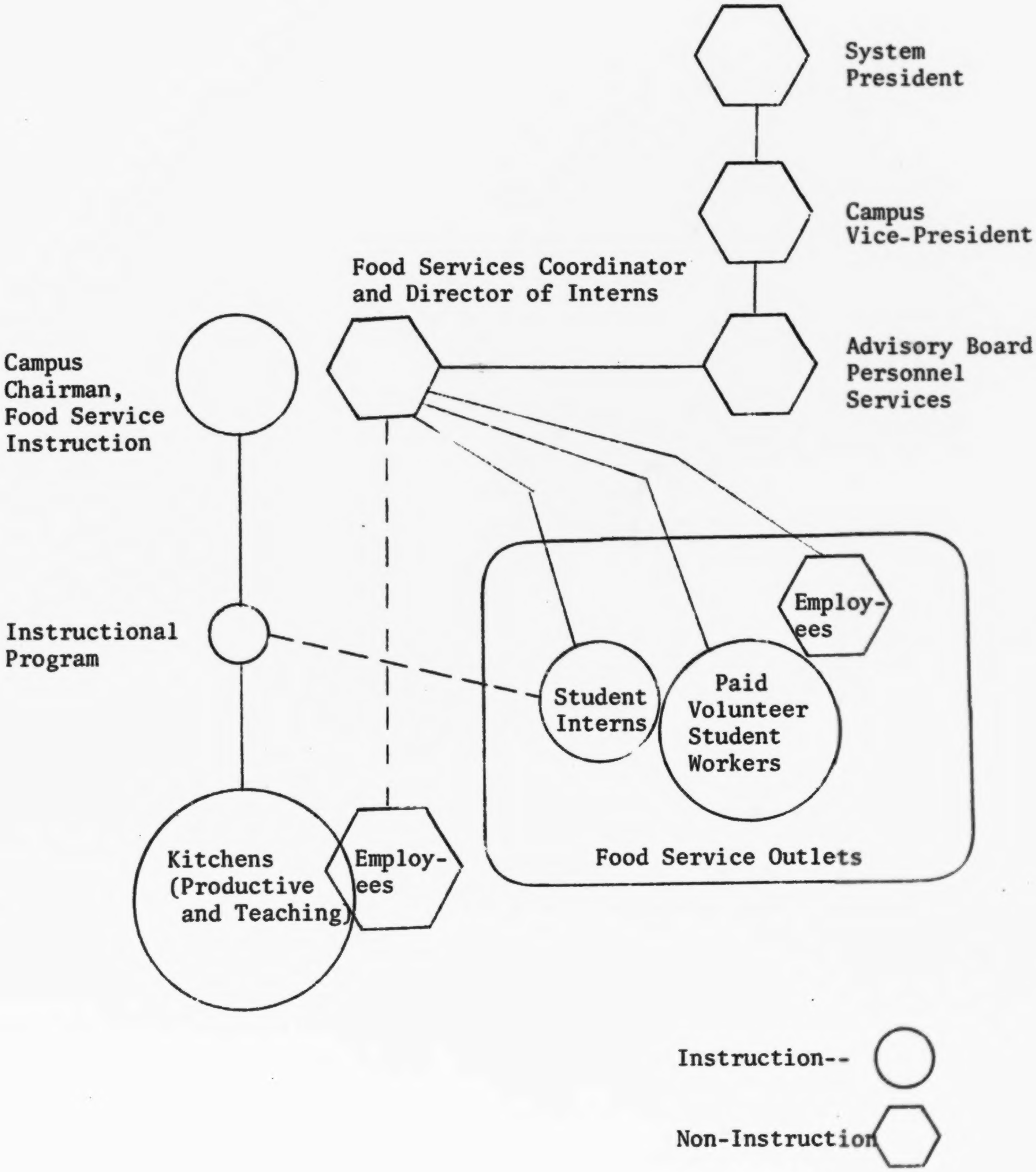
Because it is planned that the personnel of the food service area will man the various food service outlets throughout the campus, an unusual administrative organization must be devised. One scheme which has been suggested is represented by the diagram of Figure 21.2. It is essential that the administrative responsibilities implied by this diagram be understood in order for the educational specifications for the facilities planned for the food services area to be interpreted properly. The diagram indicates that the campus Dean of Student Personnel Services is the administrative officer on campus most vitally concerned with operation of the food service outlets. A food services coordinator reports in line relationship to the Chairman of the Hospitality Industry and Related Occupations Division. This food service coordinator both oversees the operation of the various food service outlets and supervises student interns. His efforts are assisted by those of the campus chairman for food service instruction, whose relationship is coordinative in nature. An advisory board, of which the Dean of Student Personnel Services is to be chairman, will advise the Dean of the Occupational Program in matters related to food services. It is implied that each food service station will serve simultaneously as a medium for instruction and as an outlet for food services needs on campus. Likewise, the productive kitchens will operate both as teaching laboratories and as productive facilities. Again, the simultaneous functions of teaching and production must be coordinated; this responsibility rests with the instructional staff.

The Instruction Program in Food Services

Philosophy and Objectives

The operation of this unit will provide for three important functions of the College: (1) it will provide on each campus some teaching laboratories for ongoing curricula in Hotel-Motel Management

Figure 21.2: A Suggested Administrative and Operational Scheme Whereby Both the Instructional Program in Food Services Occupations and the Productive Food Service Enterprise for the Campus Can Be Accomplished


System President
Campus Vice-President
Food Services Coordinator and Director of Interns
Advisory Board Personnel Services
Campus Chairman, Food Service Instruction
Instructional Program
Employ-ees
Student Interns
Paid Volunteer Student Workers
Food Service Outlets
Kitchens (Productive and Teaching)
Employ-ees
Instruction--
Non-Instruction

and Restaurant Management which are coordinated centrally; (2) it will provide instructional facilities for students in programs in Restaurant Cooking, Food Service, and Commercial Food Preparation; and (3) it will provide for all the kinds of food services for the College. The scope of the activities of this College unit thus encompasses both teaching functions in the relevant occupational areas and certain auxiliary enterprise functions of the institution. The facilities are primarily productive, but they will support the teaching function. The instructional program has objectives which are to prepare individuals for entry-level employment in a wide spectrum of occupations in the hospitality and food service industries. The food service outlets provide a variety of food services for all students enrolled in the College.

Curricula and Courses

The curricula for which campus food service outlets provide support include the following:

1. Hotel-Motel Management
2. Restaurant Management
3. Restaurant Cooking
4. Food Service
5. Commercial Food Preparation

Courses in these curricula include the following:

1. Personal Development
2. Dining Service
3. Cooking Preparation
4. Elementary Cooking
5. Advanced Cooking
6. Advanced Food Preparation
7. Cakes, Cookies and Pies
8. Food Service Sales
9. Introduction to Hotel-Motel Management
10. Front Office Procedures
11. Hotel-Motel Accounting
12. Food and Beverage Control
13. Innkeepers' Laws
14. Maintenance and Engineering

Curricular areas closely related to the instructional programs in food service occupations include the following:

1. Communications
2. General studies

3. Business management
4. Physical education

Teaching and Learning Activities

Teacher activities in the laboratory areas will include demonstration of techniques and methods, supervision of student interns, giving individual help, and leading informal discussions; in classrooms, teacher activities will include lecturing, showing slides, using overhead projectors, showing films, answering questions, and leading discussions. Student activities in the teaching laboratories will include observation of demonstrations, practice with methods and techniques, and internship in production activities. In classrooms, student activities will include listening to lectures; taking notes; observing demonstrations, visuals, and audio-visuals; asking questions; and participating in discussions.

Student Groups

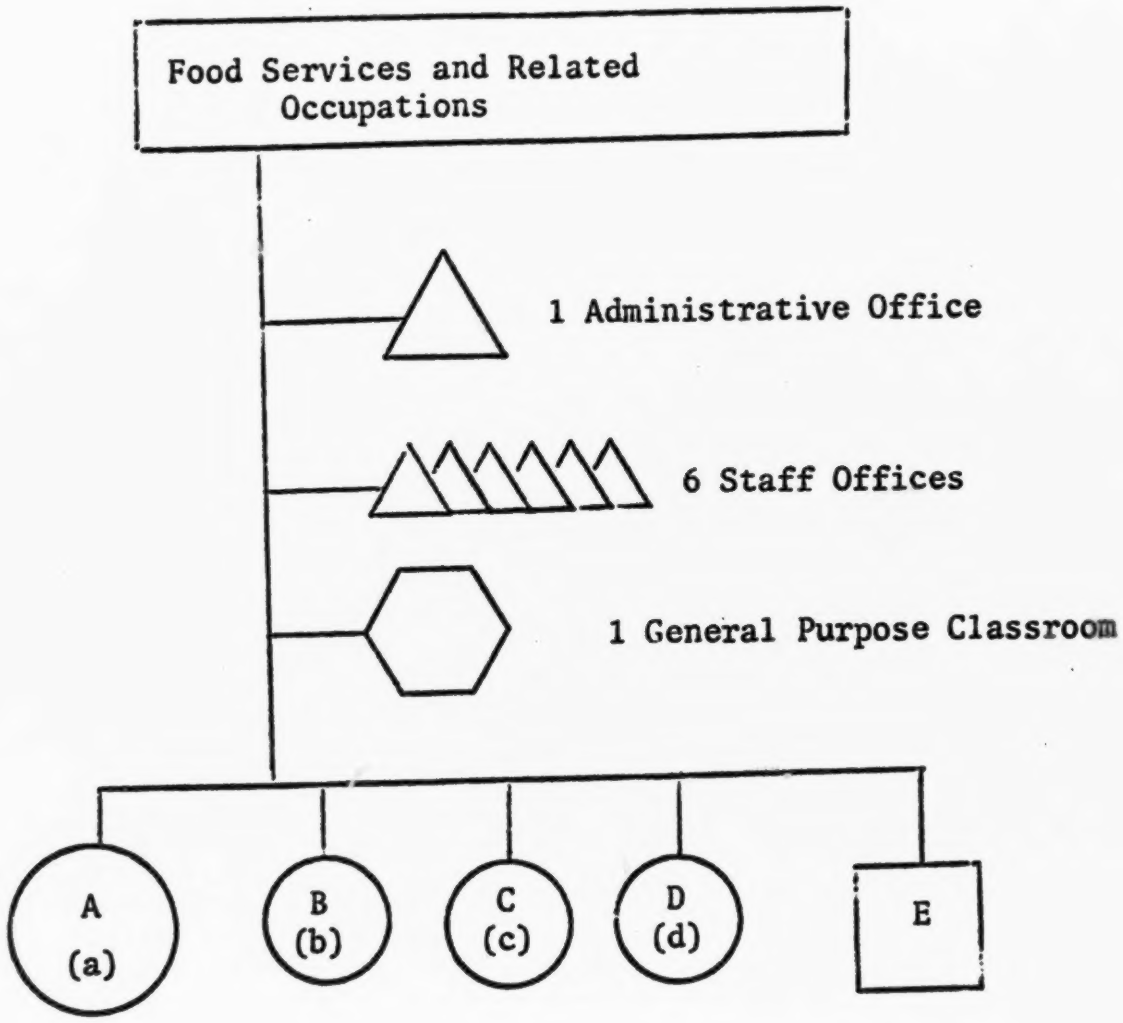
Students, faculty and auxiliary staff will operate all productive food service facilities on the College campus. Students will be grouped for instructional purposes to meet the needs of the productive function; hence, no minimum or maximum group size in laboratories can be specified. It is expected, however, that 12 to 15 students will work together in major operations. In classrooms, group sizes of 30 are permissible. An occasional (once per week, two hours per period) convocation of all food service students is expected to be called. As many as 300 students may be involved in these situations.

Space Components of the Instructional Program

Figure 21.3 presents the spaces needed to implement the instructional program in Food Services and Related Occupations. It will be noted that an administrative office, six staff offices, one general purpose classroom, and four kitchens have been assigned. Certain auxiliary space (storage, freezer space, etc.) is mandatory. On the figure, the lowercase letters cross-reference with the coding on the diagram of Figure 21.1. Each kitchen is thus related to the food service outlets which it supports.

Table 21.4 gives some comments on the specialized spaces indicated in this area. Because methods of cookery are currently

Figure 21.3: Spaces Suggested to Implement the Instructional Program in Food Services and Related Occupations


Food Services and Related Occupations
1 Administrative Office
6 Staff Offices
1 General Purpose Classroom
A (a)
B (b)
C (c)
D (d)
E

A. Main Kitchen
B. Coffee Shop Kitchen
C. Snack Bar Kitchen
D. Snack Bar Kitchen
E. Various Food Service Outlets

changing rapidly and because certain trends involving radical departures from traditional practices can even now be perceived as emerging, detailed specifications have not been listed; rather, only broad space guidelines have been drawn and only a few basic equipment suggestions have been made.

Table 21.4: Space Characteristics for Food Services for the South Campus of Seattle Community College

A. Main Kitchen (a)

Approximate Area:	4,800 square feet
Usage:	Productive kitchen for 2 dining halls, 1 cafeteria, and 1 coffee shop; teaching laboratory for all foods preparation subjects.
Furniture and Equipment:	Service counter, cold and hot food pass-throughs, salad pass-through, dessert pass-through, ice machine, roasting ovens, ranges, mixers, fry kettles, steam jacket kettles, trunnion kettles, proof box, reach-in refrigerator, reach-in freezer, sink, chopping blocks, cabinets for storage, dishwasher, glasswasher, portable mixers, milk dispensers, ice cream cabinets, roll warmers, garbage disposal, garbage can washer, food chopper, slicing machine, lowerators for all dishes, refrigerated water stations, mobile carts, walk-in refrigerator and freezer (15 feet by 34 feet), and dry storage.
Remarks:	Delivery access and access to each food service outlet.

B. Coffee Shop Kitchen (b)

Approximate Area:	800 square feet
Usage:	Satellite kitchen serving a coffee shop at implied in Table 21.3.

Furniture and Equipment: Griddles, broilers, fryers, steamers, reach-in refrigerator, reach-in freezer, radar range, quartz oven, ice machine, milk dispenser, beverage dispenser, coffee urn, trunnion kettle, dishwasher, and lowerators.

Remarks: Access to delivery.

C. and D. Snack Bar Kitchen (c and d)

Approximate Area: 450 square feet each

Usage: Satellite kitchens serving snack bars as implied in Table 21.3.

Furniture and Equipment: Griddle, broiler, steamer, freezer, refrigerator, ice machine, beverage dispenser, ice cream machine, and sink.

Remarks: Access to delivery.

CHAPTER XXII

METAL FABRICATION, MACHINING, AND RELATED OCCUPATIONS FACILITIES

Philosophy and Objectives

The purpose of these curriculums is to prepare new workers for entry employment in the skilled Metal Fabrication, Machining, and Related Occupations. In addition, they will serve to upgrade some persons already employed at lesser skilled levels of these occupations.

Full-time occupational preparatory students will complete their curriculums in three to six quarters, depending upon the program in which they are enrolled. Some students may enroll part-time for portions of the preparatory curriculum to supplement other training and experience and thereby increase their qualifications for employment.

Curriculums

Certificate

Three curriculums--machinist, sheet metal, and metal fabrication-welding--will be offered. These curriculums will vary in length but generally will not exceed one school year (nine months). A typical day will be six hours in length, with approximately four hours in the shop and two hours in the laboratory or classroom. Allied supporting and occupational general education instruction may be integrated into the occupational content of the curriculum or handled separately as the need requires.

Diploma and/or Associate In Applied Science

Six-quarter curriculums leading to the Diploma or Associate in Applied Science Degree may be offered in Product and Machine Design Technology, Machine Processing Technology, and Mechanical Technology.

These curriculums will include approximately 2,160 hours of technical specialty, allied supporting, and occupational general education instruction at the post-high school level. The typical day will be six hours in length, with approximately three hours in shop and laboratory activities and three hours of allied supporting and occupational general education.

Teaching Activities

Shop teachers will demonstrate, explain, assign and supervise learning experiences consisting of individualized tasks. Various specialized shop areas will be used on a rotation basis employing the equipment and facilities required for the several aspects of the curriculum.

Allied supporting and general education for Certificate programs may be provided by the shop instructor and/or other qualified and vocationally certificated personnel. This will include related mathematics, science, and trade theory together with blueprint reading, layout, and sketching. The instructor will demonstrate and explain using three-dimension (mock-ups and models) and projected aids and the chalk board. Closed-circuit television may be used when appropriate.

Allied supporting and occupational general education instruction for Diploma or Associate in Applied Science Degree programs will be provided by qualified and vocationally certificated personnel. Examples of allied supporting courses are applied mathematics, applied science (physics and/or chemistry), and drafting. These allied supporting courses may or may not be taught by the technical specialty instructor. When the need for additional developmental instruction is identified, individualized instruction may be used.

In conjunction with all curriculums, there will be some testing activities. These activities probably will involve materials testing, testing of fastenings, and some metallurgy. These activities should take place in a testing laboratory.

Student Activities

Machine Shop

Hand and machine tool operations will involve layout, metal removal, and parts assembly. Student activities will include: turning, boring, shaping, planing, slicing, drilling, reaming, hobbing, milling, routing, broaching, sawing, taping, grinding, buffing, lapping, honing, superfinishing and brushing. Emphasis will be placed on precise work to close tolerances.

Sheet Metal Shop

Activities will include pattern drafting, layout, folding, forming, and fastening of light gauge sheet metal as required in the construction, aircraft and fabrication industries.

Welding and Metal Fabrication Shop

Activities will include welding in various positions with processes involving electric arc and gas flames; cutting and burning of metals; joining, fastening, bending, forming and assembling of structural members; and testing of welds.

Student Groups

Class Size

Machine Shop

For shop instruction students will generally be grouped in classes of 20. At any given time of the day, the machine shop should be able to accommodate 60 students.

Allied supporting and occupational general education classrooms should be able to accommodate as many as 40 students.

Sheet Metal Shop

For shop instruction, students will generally be grouped in classes of 20. The sheet metal shop should be able to accommodate one such class of 20 at a time.

Allied supporting and occupational general education classrooms should be able to accommodate as many as 40 students.

Metal Fabrication Welding

For shop instruction, students will generally be grouped in sections of 20. At any given time of the day, the welding shops should be able to accommodate 80 students (60 in Shop #2 and 20 in Shop #1).

Allied supporting and occupational general education classrooms should be able to accommodate as many as 40 students.

Grouping Techniques

Certificate

Certificate-level students in each curriculum will be regrouped at the beginning of each quarter to adjust for advancement to higher levels of instruction, to provide for optimum use of facilities, to compensate for attrition, and to accommodate the maximum number of starting students each quarter. Certificate programs should provide for continuous enrollment. Instruction in Certificate programs will generally be cycled over a three-quarter period.

Diploma or Associate in Applied Science Degree

For shop and related instruction, students will be grouped according to level of accomplishment, courses completed, and common needs. Students will be rescheduled each quarter on a basis of the courses they satisfactorily completed, the courses needed to afford optimum progress in the curriculum, and effective use of the facilities and instructional faculty.

Characteristics of Students

Students will generally be high school graduates (primarily male) in the ages ranging from 18 years through adulthood. Some students will be employed during the hours they are not attending the College. They will normally be healthy and inclined toward manipulative mechanical work.

Space Considerations--Equipment and Furniture

This section is divided into five parts: Machine Shop, Sheet Metal Shop, Welding and Metal Fabrication Shops, Testing Laboratory, and Space Common to All Three Curriculums.

Machine Shop

1. Equipment needed to provide 60 student stations is listed in Appendix B.
2. Approximately 1,000 amps. of 440V, three-phase, 60-cycle current will be required for power-driven machine tools. In addition, 220V, three-phase and 110V, 60-cycle current will be needed for certain machines and portable tools with outlets in vicinity of benches.
3. Electric supply for machines is to be dropped from overhead busses with lighting below busses to reduce shadows.
4. Compressed air is to be dropped where required from overhead manifolds fed from compressor and tank.
5. For instruction in hardening and heat treatment, city gas is required; and a hood with exhaust system will be needed.
6. The shop area should provide space for 60 students (a minimum of 150 square feet per student) and three instructor stations.
7. Locked storage for day and evening students' projects should be provided in the shop area. These storage areas should be locked separately for each of six groups of students, and the storage access should be provided with metal shelves and bins of various sizes (for large and small projects). It is suggested that these storage areas be caged with heavy wire mesh and closed with sliding wire mesh doors.

Sheet Metal Shop

1. Equipment needed to provide 20 student stations is listed in Appendix B.
2. 440V, three-phase, 60-cycle current will be required for power-driven equipment (to be estimated on the basis of equipment lists, Appendix B). In addition, 220V, three-phase, and 110V 6-cycle current will be needed for certain machines and portable tools, with outlets in vicinity of benches.
3. Electric supply, compressed air, and city gas for furnaces is to be dropped from overhead busses and manifolds.

4. The shop area should provide space for 20 students (a minimum of 150 square feet per student) and one instructor station. An additional 250 square feet should be provided for sheet metal storage.

5. The shop area should include four storage rooms for students' projects (80 square feet each), with shelves and open floor space. Storage rooms should be caged with heavy wire mesh with wire mesh doors separately locked.

Welding and Metal Fabrication Shops

Two shop areas are required for this curriculum: Shop #1 for gas welding, cutting, burning, forming, bending, and metal preparation (capacity, 20 students); and Shop #2 for hand and machine electric welding and structural assembly (capacity, 60 students).

1. Equipment needed in these two shops is listed in Appendix B.
2. Both shops should have booths for welding with hoods and special exhaust systems.
3. Welding gasses to be manifolded to all booths in Shop #1 and certain booths in Shop #2. External storage room (about 60 square feet) is required for gas tanks feeding manifolds.
4. An overhead electric hoist on tracks is needed to serve both Shop #1 and metal storage room. Hoist should be designed with extended overhang to unload from delivery trucks.
5. An estimated 1,400 amps. of 440V, three-phase current is needed. Some 220V, three-phase, and 110V 60-cycle current is also needed, with outlets near benches and welding booths.
6. Compressed air should be manifolded to both shops.
7. Compressed air and electric current should be dropped to benches, booths and work areas from overhead manifolds and busses. Lighting should hang below manifolds and busses to reduce shadows.
8. Welding Shop #1 should provide space for 20 students (a minimum of 80 square feet per student) and one instructor station. Welding Shop #2 should provide space for 60 students (a minimum of 115 square feet per student) and three instructor stations.
9. Both shops should have locked storage areas for student projects. Four wire mesh cages with shelves are needed in each shop. Those in Shop #1 should be 30 square feet each, and in Shop #2, 50 square feet.

Testing Laboratory

The Testing Laboratory should provide adequate space and equipment to:

1. Evaluate weld specimens for student welders.
2. Evaluate weld specimens for welding certification.
3. Provide instruction in weld testing techniques.
4. Provide instruction in destructive and non-destructive metal testing.

The laboratory should be equipped to provide the following tests:

1. Tensile
2. Guide bend
3. Hardness
4. Pressure
5. Fatigue
6. Compression
7. Impact
8. Magnetic
9. Ultrasonic
10. X-Ray
11. Visual

Space Common to All Three Curriculums

1. A 1,500 square feet central tool and supply room will serve all four shops. Wickets and service doors should be provided into each shop, with a door also entering a 200 square feet supply storage room.
2. A 400 square feet dust-free testing laboratory will serve all three curriculums.
3. There will be three general-purpose classrooms (capacity, 40 students). Two of these rooms should be adjacent and divided by a folding-door wall, making it possible to seat 80 students when required. These rooms should be equipped with tables appropriate in height for students using drawing boards. Classrooms should have locked closets for storage of instructional materials and aids--separate storage for day and evening classes. These rooms should be equipped with chalk boards, screens, outlets, and provisions for darkening to permit daytime projection. Sound suppression will be required. One room should be equipped with a demonstration table with compressed air and welding gas supply.
4. Concrete floors (shop areas) should be a ground level with provisions for efficient and proper cleaning.
5. All shops should be provided with washing facilities with hot and cold water supply.
6. Lockers, one per shop student station, should be provided for storage of clothing when students change into shop clothing.

Space Requirements and Facility Relationships

Table 22.1 includes a summary of the space requirements for the occupational facilities described herein.

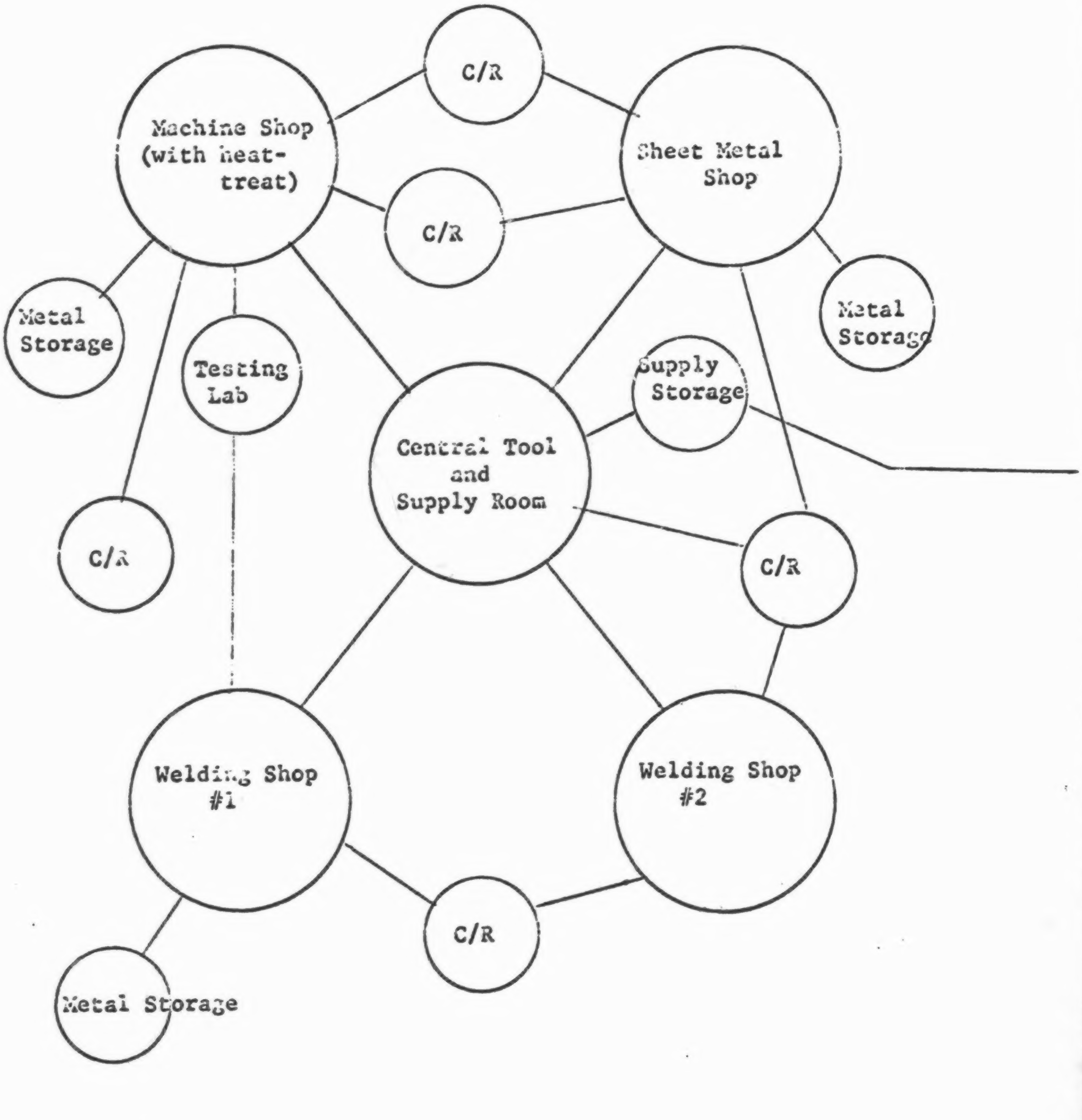
Figure 22.1 is a diagram of desirable functional relationships for the spaces described here.

Table 22.1: Space Considerations for Shop and Classroom Requirements--Metal Fabrication, Machining, and Related Occupations for the South Campus of Seattle Community College

Type of Space	Number of Instructors	Number of Students	Approximate Amount of Space
Machine Shop	3	60	9,000
Metal Storage	-	-	400
Testing Laboratory	-	-	400
Classrooms	2	60	(a)
Sheet Metal Shop	1	20	3,000
Metal Storage	-	-	250
Classrooms	1	20	(a)
Welding Shop #1	1	20	1,600
Metal Storage	1	-	600
Welding Shop #2	3	60	6,900
Central Tool and Supply Room	-	-	1,500
Supply Storage	1	-	200
TOTAL NET SPACE			23,850

(a) Requirements are included elsewhere in this Report.

Figure 12.1: Functions and Relationships - Metal Fabrication, Machining and Related Occupations Facilities



CHAPTER XXIII

OCCUPATIONAL EXTENSION FACILITIES

Philosophy and Objectives

The central purpose of Occupational Extension education is to enable workers to improve, upgrade or update their qualifications in the occupations in which they are employed. It also provides "refresher" experiences, retraining and updating for persons previously trained or employed in an occupation so they may reenter the work force. Occupational Extension education does not purport to train persons with obsolete skills for new job opportunities.

Curriculum

Occupational Extension education is provided in the form of somewhat independent courses of various lengths, rather than as organized curriculums. Potentially, such courses could be in all occupations represented in the work force in the service area of the College. Special attention is directed to occupations for which preparatory curriculums are offered by the College.

Courses are offered during the non-working hours of employed people. For most people, these are evening hours but some might attend during the day or late afternoon. In some cases, courses may be on a "round-the-clock" schedule.

The nature of the course will depend upon the needs and interests of the workers. For some, this will include shop or laboratory experiences; but for many, only classroom instruction is needed.

Teaching and Learning Activities

Teacher Activities

Shop and laboratory teachers will demonstrate, explain, assign and supervise learning experiences consisting of individualized tasks.

In general, these tasks will be at higher or more advanced levels than those in the preparatory curriculums. The tasks also will be more highly diversified.

Classroom teachers will demonstrate and explain using the chalk board and projected and three-dimension aids. Intermittently, classes will be taken to shops or laboratories for demonstrations related to classroom instruction.

Student Activities

In shop and skill development laboratories, students will engage in manipulation involving the same or similar equipment and tools used for preparatory curriculums. In general, there activities will be more diverse and more advanced than those of occupational preparatory students.

In testing and non-skill development laboratories, students will perform experiments and exercises to develop understandings of principles and properties related to their occupations similar to such learnings in the preparatory curriculums.

Classroom activities will involve, in addition to discussion and listening to explanations by teachers, highly individualized study, practice and problem solving using text, and reference and workbooks together with blueprints and other supplementary materials. For these purposes, they need to work on tables rather than tablet armchairs. At times they will work as individuals and at other times in small groups or as an entire class.

Emerging Concepts and Developing Trends

With increasing technological change and technical emphasis in occupations, Occupational Extension education will serve to keep workers abreast of new developments and assist them in developing needed technical abilities. Hence, Occupational Extension education increasingly will include scientific laboratory experiences and demonstration of new materials and processes.

It is to be expected that much more of this kind of instruction will be in short, intensive courses dealing with limited concepts for special groups of employed workers.

Further, it is expected that more use will be made of newer educational media in many instructional activities. There should be a hook up with RAMP Central providing the potential for the use of educational television and other instructional media which are a part of the system.

Student Groups

Class Size

For shop and laboratory instruction, instructional grouping may vary from 1 to 60. More than one class might be taught in larger shops at the same time. For classroom instruction, most classes will have up to 25 students with some classes as large as 35 students. Some special short courses and seminars will enroll from 75 to 100 students.

Grouping Techniques

Grouping will be based upon the number of students having needs for a particular course at any one time. Where the number enrolling for a given course exceeds the optimum class size for efficient instruction, multiple sections will be offered.

Characteristics of Students

Students will be adults of both sexes. They will be heterogeneous in all other characteristics and represent the full range from professional to skilled levels of white-collar and blue-collar occupations.

Instructional Aids, Equipment, and Furniture

Occupational Extension courses requiring shop and laboratory facilities will use the facilities provided for preparatory curriculums in the respective occupations. In some occupations, special locked storage facilities will be needed for evening student projects. Certain equipment might also be needed for the extension instruction which is not needed for the preparatory curriculum.

To serve the needs of extension classes, standard classrooms with capacities of up to 35 students should be equipped with tables and chairs rather than tablet armchairs.

A lecture hall or teaching auditorium with a minimum capacity of 100 students is needed for an average of one night per week. It should be equipped to permit note taking by students. It should have provisions for transparency projection (slide, motion picture, and overhead projectors), closed-circuit TV with video tape, and have a chalk board with ultraviolet illumination for use with fluorescent chalk. It should have a demonstration table supplied with compressed air, gas, water, 110V single-phase and 220V, and 440V three-phase electric current.

Facilities for the engineering technologies should have special provisions for Occupational Extension education as follows:

1. Drafting tables in the two engineering drawing rooms should be 3 feet by 5 feet rather than 2 feet by 3 feet.
2. Two of the four mechanical drafting rooms should have half of the drafting tables equipped with drafting machines, rather than all tables with parallel bars.

Three of the special rooms provided for the Marketing and Distribution cluster should have adequate electric outlets so they could be converted to electric typing and office machine rooms if enrollment does not occur in the curriculums as initially planned. This will permit expansion of enrollments in both preparatory curriculums and extension courses in the office occupations without entailing structural changes.

Relationship of Spaces

There is nothing special about the arrangement of facilities for extension classes. For courses requiring occasional demonstrations in shops or laboratories classrooms in the vicinity of the specialized facilities such as the "related" classrooms will be needed.

CHAPTER XXIV

APPRENTICE-RELATED FACILITIES

Philosophy and Objectives

The purpose of related instruction for apprentices is to develop, in a school environment, the understandings and abilities which are needed by journeymen craftsmen, and which cannot satisfactorily be developed through on-the-job experience. These understandings and abilities commonly include such things as mathematics and science related to the trade, blueprint reading, sketching, and trade theory.

For some occupations it is necessary to include, under the heading of related instruction, some shop instruction for skill development and some laboratory experiences to develop understandings of scientific principles and the properties of materials. The scope and content of related instruction must be planned separately for each apprenticeable occupation with the advice of the respective joint apprenticeship committees.

Curriculum

The curriculum for each occupation consists of a series of units and courses graduated to parallel the on-the-job experiences. Two or more subjects might be taught in conjunction with each other and by the same instructor.

On the South Campus, related instruction will be provided for those occupations represented in the program of preparatory curriculums on that campus. It will also be provided for occupations having characteristics similar to those in the preparatory program on the South Campus. Related instruction will be provided on the South Campus for occupations represented in, or similar to, the preparatory programs on the other campuses and not on the South Campus.

On the basis of the foregoing, apprentice-related instruction will be provided on the South Campus for the following occupations:

- Aircraft mechanics
- Automotive machinists
- Automotive sheet metal workers
- Bakers
- Boilermakers
- Ironworkers-shopmen
- Machinists
- Marine sheet metal workers
- Sheet metal workers
- Structural steel workers

Apprentice-related instruction will be provided on other campuses for the following occupations:

- Asbestos workers
- Automatic sprinkler workers
- Barbers (proposed)
- Brick masons and tile setters
- Carpenters
- Cement masons
- Floor coverers
- Glass workers
- Lathers
- Meat cutters
- Millmen
- Molders
- Painters
- Patternmakers
- Pipefitters
- Plasterers
- Plumbers
- Refrigeration workers
- Roofers
- Shipwrights and boatbuilders
- Sign painters
- Steam fitters
- Watchmakers

For some time to come, it is expected that Seattle Community College will provide facilities at several locations other than the College campus for apprentice-related curriculums. Such facilities will include those at Gompers and perhaps at District high schools where such are deemed appropriate.

Teaching and Learning Activities

Teaching Activities

All apprentices will receive classroom instruction. The classroom-related instructor will explain, demonstrate and supervise practice and study. He will use the chalk board, three-dimensional teaching aids, and projected (slides, overhead and motion picture) aids. He will teach mathematics, some scientific principles, sketching, blueprint reading, and trade theory.

Some apprentices will also be taught certain shop skills and technical principles involving laboratory experiences. The shop or laboratory instructor will explain, demonstrate, assign and supervise individualized tasks to develop skills or understandings.

Student Activities

The apprentices will listen, observe, practice, sketch and study. Where practical and laboratory instruction is provided, apprentices will also perform appropriate operations with equipment, machines and hand tools as individuals and conduct scientific experiments related to their respective occupations.

Emerging Concepts and Developing Trends

Because of increasing technological developments in most occupations with new materials, methods and equipment, greater emphasis will be placed upon such matters in the related instruction for apprentices. Instruction in standard classrooms will be supplemented with more demonstrations and experiments in school, shops and laboratories. Content of text, reference and workbooks will be supplemented with newer materials in other forms.

Student Groups

Class Size

Related classes will range from 15 to 28 students per class.

Grouping Techniques

Some classes of apprentices will meet for related instruction one night per week; others two nights per week. A few classes will meet during daytime hours. The total number of apprentices for a given occupation will be divided into classes to maintain the class size limits referred to above and to keep apprentices on appropriate competency levels. Where practical instruction is to be provided, class sizes will be held to the lower limits.

Evening classes will normally meet on one or two of the first four nights of the week (not Friday, Saturday or Sunday evenings). Day classes will meet on weekdays, including Saturdays. Classes meet a minimum of 144 clock hours per year with some as high as 288 clock hours per year.

Characteristics of Students

Most apprentices are high school graduates of ages ranging from 18 years into adulthood. Most apprentices in these occupations are male.

Instructional Aids, Equipment, and Furniture

Shop and laboratory experiences will be provided in the same facilities used for respective occupational preparatory curriculums. However, adequate locker storage space for students' projects must be provided in connection with shop instruction of apprentices. Needed space described in connection with shops or laboratories will also be used for apprentice-related instruction.

Approximately 18 classrooms will be needed during evening hours for apprentice-related instruction. Classrooms already proposed will serve this purpose. Each classroom should have a 30-student capacity and be furnished with individual tables (30 inches by 36 inches) and chairs. Four of these classrooms should have two large (3 feet by 5 feet) tables for inspection of blueprints and provisions for use of drawing boards on the individual tables.

All classrooms should have locked storage space for instructional aids and materials. Provision should also be made for portable racks to hold students' street clothing. So far as possible, classrooms should be located in the general vicinity of the shops.

Four classrooms similar to those described above are needed for full-time use during day hours for apprentice classes.

CHAPTER XXV

CAMPUS BUILDING OPERATIONS FACILITIES

Program, Philosophy and Objectives

The overriding purpose of the plant operations program is to serve as a supporting function to the instructional program of the College. The buildings must be kept open and clean and in an acceptable state of repair for the most effective and efficient instructional utilization. This is a critical supporting role for which adequate facilities must be provided so that the College may operate its instructional program around the clock on a year-round basis.

The secondary objectives of the plant operations program are summarized as follows:

1. Encourage efficient plant operation.
2. Provide effective custodial services.
3. Give effective support to campus security.
4. Enhance the safety of occupants.
5. Promote the health of occupants by maintaining a high standard of sanitation.
6. Promote and maintain attractive surroundings.
7. Lend direct support to central maintenance functions.

Functions and Services to be Housed

The following is a list of the specific functions and services for which adequate facilities must be provided:

1. Daily and periodic cleaning of the buildings and campus.
2. The periodic scrubbing and waxing of floors.
3. Continuous and complete lawn care including mowing, trimming, edging and watering of areas in the immediate vicinity of the buildings.

4. Receiving and storing bulk instructional and office supplies.
5. Operating and servicing heating, ventilating and air-conditioning systems.
6. Operating and servicing building service systems.
7. Opening the plant for regularly scheduled and emergency functions.
8. Receiving and storing general supplies and equipment.
9. Performing minor maintenance tasks in support of central maintenance.
10. Test, operate and service safety and alarm devices.
11. Give operational support to the campus security program.
12. Provide campus-wide delivery and distribution service.

Number and Types of Personnel Involved in the Operations Program

According to formulas and standards used by the Operating Department of the Seattle School District, approximately 45 persons would be required to staff the custodial service program of the South Campus. The breakdown would be as follows:

Day shift	7
Afternoon shift	7
Graveyard shift	31
TOTAL	45

The operating staff would include a plant manager, matrons, engineers, assistant custodians, and janitors.

The cleaning load of janitors would be from 13,000 to 18,000 square feet per day. This work load includes all phases of the work, including weekly, monthly, annual and periodic cleaning tasks. The bulk of the work in cleaning and caring for the buildings will be accomplished by the graveyard shift. It is apparent that the plant must be planned for "round-the-clock" operating and cleaning services.

The six major functions of the operating staff are:

1. Plant operations
2. Custodial services
3. Plant security

4. Grounds maintenance
5. Supply management services
6. Minor building maintenance

Space Descriptions and Their Relationships

Central Supply Area

A central supply area should be provided to store bulk items of supply and instructional materials, furniture, and equipment. Supply and equipment items will be received and distributed throughout the plant from this central point.

The Central Supply Room should be located for ease of supply distribution as well as access for service. The central receiving dock should be located adjacent to the Central Supply Room. Vehicular access to the receiving area is essential. Similarly, vehicular access to other critical points of service must be provided.

This space should have one large door with an opening at least 8 feet wide and 12 feet high. Doors should be equipped with dead locks. Open shelving should be provided which is at least 24 inches wide and on 24-inch vertical spacing. Approximately one-fourth of the area should be for bulk-type storage in large boxes and for furniture.

This space should contain at least 3,000 square feet and may be divided into more than one room. A small office for a supply manager or receiving clerk is needed. This office should have a dutch door and a wire glass panel opening onto the receiving area. An area for repackaging and wrapping should be incorporated into this space.

Central Receiving Dock

The central receiving dock should have a minimum of 17 feet roof clearance to accommodate a "road rig". The platform should have a hydraulic plate on the edge to accommodate the different heights of truck beds. An 8-foot wide ramp should run from the platform to the ground level to accommodate equipment on wheels and hand trucks. A half-ton traveling hoist which would extend over truck beds, over the loading platform, and into the receiving area would be desirable.

The receiving dock should be located adjacent to the central supply area. An electric jitney and forklift could be used in conjunction with carts to unload, lift, move and distribute equipment and supplies about the campus.

Decentralized Storage Facilities

Storage or supply rooms are needed throughout the entire plant. Each building or major building component should have a large storage room for the storage of extra furniture and equipment and bulk items. For the most part, other decentralized storage rooms will be auxiliary to instructional and other spaces and are considered separate here. However, each building should be provided with a room of 300 to 400 square feet in size and located at ground level in a generally central location.

Likewise, each building should have a decentralized custodial supply room for custodial service operations. These rooms should be equipped with shelving, tool hangers, a small workbench, a slop sink, and a water source with hot and cold water. This room should be located adjacent to the large decentralized storeroom in each building at ground level.

Plant Workshop

A space of 400 to 500 square feet is needed for performing minor plumbing and electrical maintenance tasks, minor repair and servicing of custodial equipment, glass cutting, minor painting and refinishing, and electrical repairs. Storage bins for minor plumbing fixture parts; electrical service needs; paints; glass; and minor hardware items such as bolts, nuts and screws should be provided.

This area should be well ventilated and materials used for interior finishes should be appropriate.

This facility should be located in the immediate vicinity of the central supply area, the receiving dock, and the plant manager's office.

Plant Manager's Office

An office approximately 120 to 150 square feet is needed for the plant manager. This room should have a telephone, an executive desk and chair, at least two side chairs, three to four filing cabinets, a bulletin board, an outbox unit with ten boxes for outgoing letters, work orders, inspection forms, etc. The room should also be equipped with an intercommunication system to all parts of the plant. Key storage for a master key system should be provided in the plant manager's office.

The plant manager's office should be located in the vicinity of the plant workshop and the central supply area.

Facilities for the Operating Staff

The following are needed for the operating staff with separate facilities for each sex:

1. Small dressing rooms with space for lockers. Ten half-length lockers should be provided for women and 35 for men.
2. Small shower rooms with two shower heads each adjacent to dressing areas.
3. Small rest rooms with at least one fixture of each type.
4. A small lounge area to serve both sexes. Space for a small electric stove, refrigerator, and 4 four-place tables should be provided.

These facilities should be located in the vicinity of the plant manager's office. Room finishes and appointments conducive to adequate sanitary standards are required.

Custodial Service Closets

A small custodial closet should be provided as an auxiliary unit to every pair of men's and women's toilets and in other areas also, such as the kitchen, the shower and dressing rooms in the gymnasium, the central administrative offices, etc. One janitor will clean approximately 15,000 square feet of floor space. He is dependent upon the custodial supply closet as a source of water and supply of materials and equipment as he performs his cleaning functions. Every floor and every building should have at least one custodial supply closet. Large building components will have several.

The custodial supply closet would be at least 40 square feet in size and equipped with one wall of shelves on 16-inch vertical spacing, a tool hanging peg board, additional open space for a cart, and a floor machine on the floor. Floor-level mop rinsing basins should be provided in all custodial closets. Likewise, a floor drain should be available in all custodial closets.

Plant Security Office

A small office of approximately 150 square feet should be provided for the plant security officer. The room should have space for two desks and two chairs, filing cabinets, and a time clock station.

Vertical Traffic Movement

In all buildings of more than one story in height, elevators or ramps should be provided to move equipment, supplies, etc., from one area of the plant to another. These facilities should also be planned to serve students in wheel chairs or the otherwise physically handicapped.

Waste Disposal Facilities

The College will contract for disposal of wastes; therefore, no incineration facilities are required. Space should be provided in strategic areas for storing disposal equipment similar to the "Dempsey-Dumpster". Service drives are needed to their locations, and platforms and screens are needed to receive them. An area for waste disposal should be convenient to each building. Depending on campus layout, several buildings could perhaps be served by one disposal area.

A system is needed for the disposal of instruction tests, confidential student documents, and similar confidential items. The use of "shredders" should be investigated.

Garage

Storage space is needed to house a forklift, a panel body truck, and at least two electric cart delivery vehicles.

Service Access

A service drive and a paved service area should be provided for the loading dock and central supply area. Service access from this area should be convenient to other delivery and service points on the campus.

Space Guidelines

The following is an estimate of the number and type of spaces required and guidelines regarding the amount of net square feet for each:

1.	Central supply	1	3,000
2.	Receiving dock	1	200
3.	Decentralized storage	8 (estimated)	3,200
4.	Plant workshop	1	500
5.	Plant manager's office	1	150
6.	Operating staff facilities	2	400
7.	Custodial supply closets	25 (estimated)	1,000
8.	Plant security office	1	150
9.	Elevators	8 (estimated)	800
10.	Garage	1 (4 stall)	800
11.	Waste disposal facilities (exterior area)	-	-
12.	Decentralized men's and women's rest rooms	32	7,200
13.	Utilities space	-	4,000
NET TOTAL			21,400

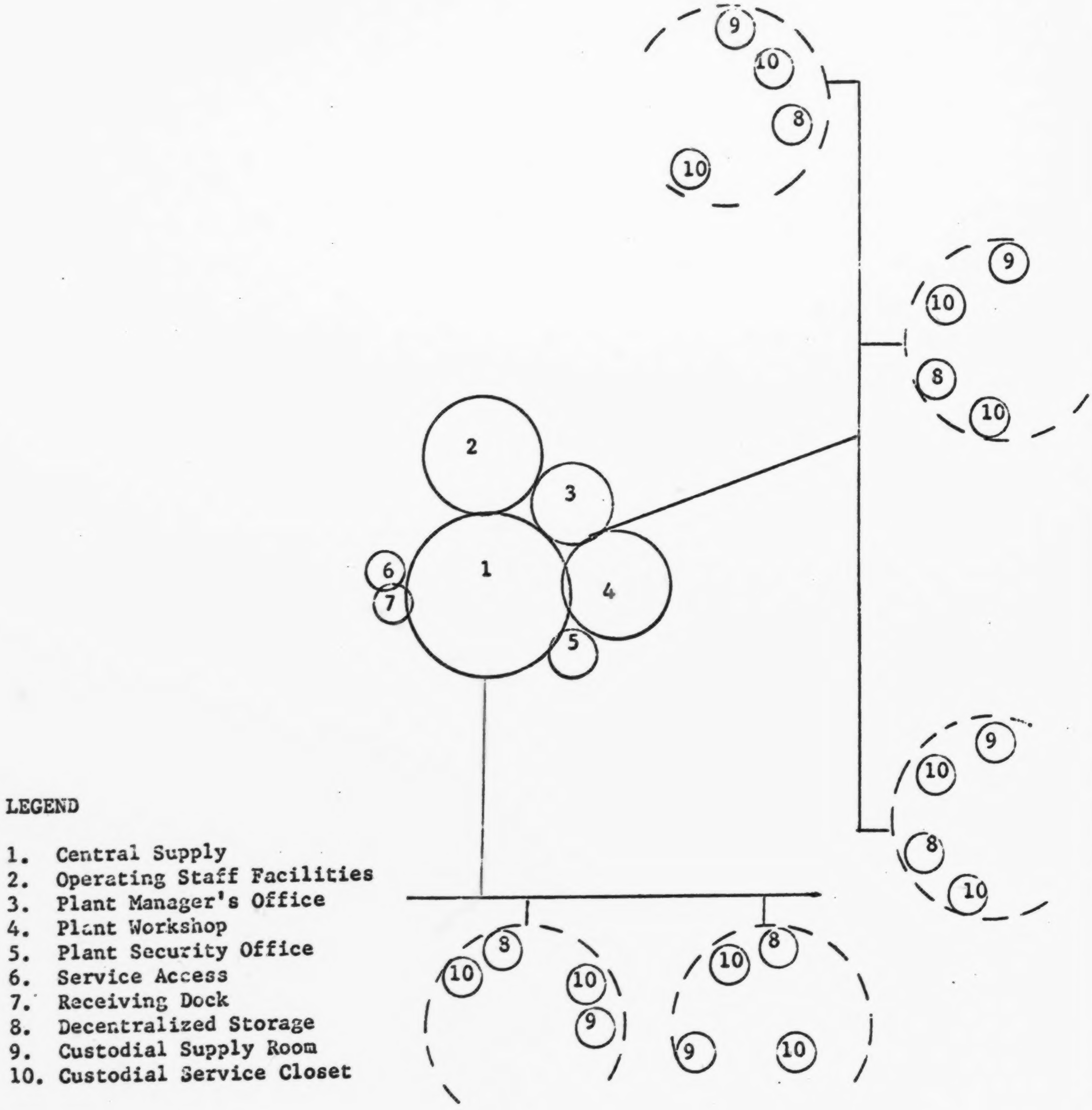
Space Relationships

Figure 25.1 indicates the general pattern of desirable space relationships.

Other Special Considerations and Suggestions

1. Consideration should be given to the provision of a low pressure steam heating or high temperature hot water heating system with fully automatic controls which would not require constant surveillance by an engineer during varying loads in mild weather.
2. Higher pressure package steam generating units should be considered to meet the needs of: automotive, dressmaking, and mechanical engineering technology classes.
3. Zoned heating and air-conditioning, budget permitting, should be considered for maintaining comfortable temperatures in special areas.
4. The extra cubic feet of air displacement for removing tobacco smoke during peak loads in smoking areas should be provided in the dining room, student center, faculty rooms, meeting rooms, etc.

Figure 25.1: General Relationships - Campus Building Operations Facilities



5. Electrical heating or other fully automatic heating methods for areas used during off-school hours should be considered. Offices, libraries and perhaps other selected areas would be frequently used on weekends, after school hours, and during vacation periods. Some of these controls could be programmed by a master clock system.

6. Installation of illuminating devices that could be changed and serviced by one man standing on the floor would be safer and would encourage more frequent service. Auditorium, gymnasium and other high-ceiling areas might be serviced from a crawl space. "Group re-lamping" of fluorescent lamps should be considered, but the fixture should be a design that makes re-lamping and cleaning practical.

7. Window washing should be possible if windows could be easily reached from the floor or ground without the use of special equipment or tall ladders that might be cumbersome. Outside screening discourages good cleaning practices. Special consideration should be given to this problem.

8. Windows should be permitted to open in such a way as to reduce torn shade and drapery damage and at the same time not become a safety hazard.

9. Heavy-duty garbage can washing facility with a large volume of hot water and steam should be located near the garbage pick-up area.

10. Zone-key systems with grand master provision provides greater security and avoids conflict of programs.

11. Vandal-proof techniques should be planned to isolate sections of one building that may be independent of other parts of the same building on certain occasions. Each area or zone should be provided with its own telephone service, lavatories, and drinking fountains.

12. Provide ammeters instead of indicator lights on main switch panels to show the load on electric motors.

13. Walls that can be washed and rinsed, floors without too many corners, floor stops for doors, and otherwise easy-to-clean surfaces will encourage a more regular cleaning program.

14. Sidewalks, stairways, inclines, roofs and drains should be so located and constructed that snow and ice removal procedures can be held to a minimum.

15. Toilet rooms should be uncluttered with fixtures--wall mounted wherever possible. Too many doors hinder cleaning procedures. Smooth, hard and unbroken wall and floor surfaces encourage good cleaning habits. Floors should slope to the drains in the toilet rooms.

16. Smokers and non-smokers should have several areas restricted to eating, lounging and smoking so that it will be possible to eliminate smoking and eating in the lavatories.

17. A master key-lock system should be selected at the appropriate time to provide a maximum of security to critical areas and, at the same time, to provide needed access by authorized persons to required rooms and spaces.

18. A gasoline pump and a buried gas tank should be provided for the dispensing of gas to College-owned vehicles. This pump and tank should be located for control adjacent to the supply/receiving dock area.

19. A signaling device such as an electric carillon should be provided to indicate the beginning and ending of class periods. Also, tamper-proof time clocks should be located in strategic places in corridors and elsewhere as a service to faculty and students.

20. Care should be exercised in the selection and location of thermostats in offices, instruction rooms, and semi-public spaces. Thermostats in offices should be adjustable by office occupants, while those in instruction rooms and semi-public spaces should not be adjustable.

21. An underground sprinkling system should be provided for all landscaped areas.

22. Hose bibbs should be provided at strategic locations on the exterior of all buildings.

APPENDIX A

FURNITURE AND EQUIPMENT LIST FOR THE AERONAUTICS CURRICULUM

Airframe Shop #1

Sheet Metal

1. 1 - 4' Cornice break
2. 1 - 4' Square shear
3. 1 - Hand shear (Beverly or other satisfactory for cutting irregular shapes to 18 gauge material)
4. 1 - Sheet metal roll, 30" (satisfactory to handle 18 gauge material)
5. 1 - Box brake, small, 24"

Aircraft Welding

1. Welding manifold with a master gauge and 20 slaves
2. Light aircraft torches (satisfactory for welding materials up to 3/16" in thickness with an assortment of tip sizes for each torch)
3. Cutting torch
4. Portable welding cart--cart, regulators, hose and general purpose torch and tips

Fabric

1. 2 - Commercial sewing machines
2. Wood- or Formica-covered worktables for fabric cutting

Wood Toolroom

1. 1 - Jointer, 8"
2. 1 - Planer, 12"
3. 1 - Table saw, 10"
4. 1 - Belt sander (Delta or equivalent)
5. 2 - Band saws, 14" and 20 variable speed
6. 2 - Tool grinders, 6" or 7"
7. 1 - Heavy-duty grinder, 12"
8. 1 - Small power shear, 14"
9. 1 - Toolroom lathe, 10"

10. 1 - Nibbler, sheet metal
11. 1 - Unishear
12. Rotex punch
13. Rockwell hardness tester

Rigging and Assembly

1. 3 - Scales, satisfactory for weighing complete aircraft (same type used by the Highway Patrol Department as portable units for weighing trucks)
2. 6 - Jacks for aircraft tripod, tail, wing
3. Shaper wood, floor model

Paint

1. 1 - Paint spray booth (satisfactory for painting dopes and lacquers)
2. 3 - 1-quart paint cups with gun
3. 1 - Paint gun (satisfactory for spraying dope and for use on a 5-gallon pot)
4. 1 - Paint pot, 5 gallon, with sufficient hoses to paint a complete aircraft

Airframe Shop #2

Equipment

1. 1 - Tube flaring machine to handle up to 1" hydraulic tubing, satisfactory for making both single and double flares
2. 1 - Tube bending machine, hand operated with an assortment of radius blocks for bending up to 3/4" in diameter
3. 5 or 6 Functional test stands, at least 2 of which shall have a vari-drive, satisfactory for driving hydraulic pump at variable speeds (one of which shall be portable and satisfactory for using as auxiliary hydraulic power on an aircraft)

Electrical

1. 1 - Lathe for armature reconditioning
2. 3 - Armature growlers
3. 1 - Small spray booth for cleaning parts
4. 3 - Armature mica undercutting tools

5. 2 or more generator test stands, vari-drive with a power bank satisfactory for checking aircraft electrical component parts
6. 1 - Starter torque test stand
7. 1 - Battery charging equipment unit (to be installed in a satisfactorily ventilated area in the electrical shop)
8. 2 - Generator test stands so that generator paralleling can be demonstrated
9. Plan for driving and regulating 200V, 400-cycle, 3-phase alternators
10. Electrical outlets
    4 @ 100 amp., 3-phase, 220V
    4 @ 30 amp., 3-phase, 220V
    115V duplex outlets (grounded), at least 2 per student station
11. Power supply test stand for running aircraft alternator

Power Plant Shop #1

Fuel and Carburetion

1. 2 - Fuel pump test stands
2. 4 - Carburetor flow benches (Mandsfield), satisfactory for setting float-type carburetors
3. Flow should be from a common source--pressure should be adjusted at each station
4. 1 - Storage area for units being worked on in shop

Ignition

1. 2 - Spark plug cleaning and test equipment units
2. 2 - Magnetic test stands
3. 2 - Magnet chargers
4. 2 - Coil and condenser testers
5. 2 - Ignition harness testers

Power Plant Shop #2

Engine Overhaul

1. 1 - Cylinder hone (wet portable)
2. 2 - Cylinder hones with assorted stones driven by ½" air motor

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3. 2 - Engine cleaning equipment units to include tank for handling decarb or similar substance
4. 2 - Spray booths for washing down parts, vented
5. 3 - Valve seat grinding tools and assortment of stones
6. 2 - Valve grinding machines
7. 2 - Valve seat stone dressing stands
8. 2 - Valve spring testers
9. 1 - Unit of valve lifters
10. 1 - Magnaflux machine with magnaglow
11. 5 - Small engine build-up stands to handle 4 to 8 cylinder engines
12. 1 - Engine build-up stand, satisfactory for handling in-line engines
13. 3 - Engine stands, satisfactory for handling radial engines
14. 2 - Engine run stands for build-up and run-in of completed engines (should be satisfactorily instrumented for engine run)
15. 1 - Carbo-blast machine
16. Various solvent and oil containers
17. 1 - Small spray paint booth
18. 1 - Ground power unit, 30V, 300 amp.
19. 1 - Ground power unit, 30V, 1,200 amp. (jet engine starting)
20. 1 - Shop rectifier, 30V, 130 amp.
21. 1 - Hot oil bath tank for heating engine parts
22. 1 - Small freezer for chilling engine parts
23. 115V service outlets, at least 2 per student station, for Power Plant Shops #1 and #2
24. (7,000 amp.) total power for engine and accessory shop equipment
25. 1 - Operation jet engine on stand

Propellers

1. 2 - Propeller balance pits (device satisfactory for checking prop tracking) in air current-free room
2. 1 - Propeller governor test stand
3. 2 - Propeller blade checking tables
4. 2 - Hydromatic propeller test stands
5. 2 - Propeller 2-position test stands

APPENDIX B

EQUIPMENT FOR METAL FABRICATION, MACHINING, AND RELATED OCCUPATIONS FACILITIES

Equipment for Machine Shop Practice Curriculum

This list is based upon the following amounts (clock hours) of shop instruction in the various categories shown. The instruction in sheet metal operations will be provided in the sheet metal shop. The listed equipment will provide 35 student stations.

1. Shop instructional hours for each student:

a.	Sheet metal (shear, box and pan brake) operation	50 hours
b.	Bench work (layout and hand finishing)	40 hours
c.	Shaper	50 hours
d.	Drill press and radial drill	50 hours
e.	Lathes (engine and turret)	300 hours
f.	Milling machine (knee type)	300 hours
g.	Jig bore	75 hours
h.	Tool and cutter grinder	75 hours
i.	Surface and cylindrical grinder	75 hours
j.	Heat treat	25 hours
k.	Numerically controlled machine (profile)	50 hours
	TOTAL	1,090 hours

2. Equipment to support class of 35 students:
   a. 10 - Lathes, South Bend, toolroom, floor model
      Capacity--13" swing, 28 CC
      Model CL8145C

      2 - Lathes, South Bend, toolroom, floor model
      Capacity--16" swing, 57CC
      Model CL8155E

      2 - Profile milling machines, numerically controlled

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10 - Milling machines, Cincinnati, knee type, horizontal, universal
Capacity--28" table travel
Model 2

2 - Milling machines, Cincinnati, knee type, horizontal, universal
Capacity--42" table travel
Model 4

1 - Shaping machine, Cincinnati, horizontal, universal table
Capacity--20" stroke
Model 2" standard

2 - Grinding machines, Cincinnati, tool and cutter, universal
Capacity--10" swing, 27 CC
Model 2

1 - Grinding machine, Grand Rapids, surface, magnetic chuck
Capacity--12" x 40" table, 46" travel
Model 580

1 - Grinding machine, Cincinnati, external, cylindrical, universal
Capacity--10" swing, 18 CC
Model 10R

1 - Boring machine, DeVlieg, jig bore
Capacity--24" x 36" table, No. 50 taper

1 - Drilling machine, Carlton, radial plane
Capacity--3' arm, 11" column, No. 4MT
Model LA

2 - Drilling machines, Avey, floor, sensitive, box column
Capacity--1" x 24" swing, 1 spindle
Model BMA 4

2 - Grinding machines, Cincinnati, pedestal
Wheel size, 8" x 1"
Model FHA

1 - Grinding machine, Cincinnati, pedestal
Wheel size, 12" x 2"
Model GPTA

1 - Grinding machine, Cincinnati, carbide tool
Tool size, 6" x 1" face
Model BCGW

1 - Sawing and filing machine, Grob, combination and contour
Capacity--36" throat, 20" work thickness
Model 2S-36-U, with blade welder

1 - Power hacksaw, Johnson, band type, wet cutting
    Capacity--10' round, 18" flats
    Model J

1 - Hydraulic press, Drake
    Capacity--50 ton
    Model 50H

1 - Surface plate, Challenge, granite or steel, with stand
    Size, 4' x 8'

2 - heat treat furnaces, electrical, controlled atmosphere
    Capacity--24" x 24" x 30" box, 1650°F

The brand specified is only suggested. Any equipment in operating condition is acceptable provided it is not so large as to prevent it from being installed in the space provided. Floor space requirements have been estimated from machine sizes listed.

b. Sufficient auxiliary equipment should be purchased to equip and operate the machine shop. Any of those items normally considered to be a part of, or an accessory to, the machines would be desirable. This would include lathe accessories such as: 3- and 4-jaw chucks, collet chucks and collets, fare plateau, tool post turrets, and taper attachments and centers. Milling machine accessories such as: power feed attachment, dividing head, rotary table, outboard arbor supports, hartford chuck, vertical head, universal head, mill vise, and full- and sub-arbors.

Equipment for Sheet Metal Working Curriculum

The following equipment will provide 35 student stations:

1. Brakes
    a. 1 - 6' Power
    b. 1 - 1' Hand (with cornice moulds)
    c. 1 - 4' Hand
    d. 1 - 6' Finger
    e. 1 - 30" Bar folder

2. Hand roll forming machines
    a. 1 - 24"
    b. 1 - 30"
    c. 1 - 36"

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3. Shears
   a. 2 - 3' Jump
   b. 1 - 6' Gap
   c. 1 - Beverly
   d. 1 - Bar

4. Welding equipment
   a. 1 - Gas
   b. 1 - Arc
   c. 1 - High frequency heli-arc
   d. 1 - Spot welder

5. Grinders
   a. 1 - Bench
   b. 1 - Pedestal
   c. 3 - Portable

6. Hand turning machines (with bench)
   a. 2 - 2-Elbow, large and small
   b. 1 - Easy edger
   c. 1 - Wiring
   d. 1 - Thin edge (burring)
   e. 1 - Thick edge
   f. 1 - Grimping
   g. 1 - Stretching
   h. 1 - Combination

7. 1 - Ring and circle cutter

8. 1 - Rotex punch

9. 1 - Complete set of sheet metal shop stakes on 4' x 12' bench

10. 6 - Gas furnaces on tables, 4' x 10'

11. 6 - Work benches with vises, 4' x 12'

12. 1 - Layout bench, 6½' x 14'

13. 1 - Power Pittsburgh machine with pipe lock and flange attachment

14. 1 - Roller table to handle large metal sheets, 4' x 8'

15. 1 - Drill press (floor type)

APPENDIX B

Equipment for Welding and Metal Fabrication

Shop #1--gas welding, cutting, burning, forming, bending, and metal preparation (capacity 20 students, 1 instructor):

1. 12 - Gas welding bench stations (gases manifolded)
2. 4 - Radiographs
3. 8 - Portable gas welding outfits
4. 1 - Forming roll (150 square feet required)
5. 1 - Shear, 6' x 3/8" capacity (200 square feet required)
6. 1 - Bender, iron (100 square feet required)
7. 4 - Slabs, 5' x 5' (400 square feet required)
8. 1 - Ironworker (100 square feet required)
9. Grinders, drill presses, etc.

Shop #2--hand and machine electric welding and structural assembly (capacity 35 students, 2 instructors):

1. 30 Electric welding booths
2. Machine welders
3. Other

APPENDIX C

TABULATIONS OF ESTIMATED FACILITY NEEDS FOR 5,000 FTE'S FOR THE SOUTH CAMPUS OF SEATTLE COMMUNITY COLLEGE

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
I. INTRODUCTION (No Space Requirements Indicated)					
II. SITE PLANNING AND DEVELOPMENT (No Space Requirements Indicated)					
III. ADMINISTRATION AND FACULTY					
Administration					
Campus Vice-President					
Office		1	400		
Rest Room		1	24		
Secretary/Reception		1	150		
Storage		1	27		
Conference Room		1	400		
Coffee Bar		1	24		
Sub-Total				1,025	
Staff Lounge/Coffee Bar		1	524		
Staff Workroom		1	240		
Sub-Total				764	
Dean, College Parallel					
Office		1	225		
Secretary's Office		1	150		
Storage		1	25		
Sub-Total				400	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Administrative Assistant					
Office		1	120		
Secretary's Office		1	120		
Storage		1	25		
Sub-Total				265	
Dean, Occupational Program					
Office		1	225		
Secretary's Office		1	150		
Storage		1	25		
Sub-Total				400	
Administrative Assistant					
Office		1	120		
Secretary's Office		1	120		
Storage		1	25		
Sub-Total				265	
Dean, Adult General Education					
Office		1	225		
Secretary's Office		1	150		
Storage		1	25		
Sub-Total				400	
Administrative Assistant					
Office		1	120		
Secretary's Office		1	120		
Storage		1	25		
Sub-Total				265	
Dean, Student Services					
Office		1	225		
Secretary's Office		1	150		
Storage		1	25		
Sub-Total				400	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Administrative Assistant					
Office		1	120		
Secretary's Office		1	120		
Storage		1	25		
Sub-Total				265	
Coordinator, School in the Evening					
Office		1	150		
Secretary's Office		1	150		
Storage		1	25		
Sub-Total				325	
Administrative Assistant					
Office		1	120		
Secretary's Office		1	120		
Storage		1	25		
Sub-Total				265	
Public Information					
Office		1	120		
Secretary's Office		1	120		
Workroom		1	120		
Storage		1	40		
Sub-Total				400	
Secretarial Pool for Administrative Offices			250	250	
Assistant Director of Business Services					
Business Office		1	150		
Secretary's Office		1	150		
Lobby, Counter and Staff Space					
Outer Lobby		1	100		
Counter		-	50		

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Inside Service Area		-	120		
Counting Room		-	96		
Accounting Room		-	120		
Clerical Desk Area		-	214		
Storage		-	36		
Vault		1	100		
Receiving Room		1	450		
Sub-Total				1,586	
Data Processing Room		1	750	750	
Telephone Service Room		-	300		
Operator		-	150		
Sub-Total				450	
Total Administrative				8,475	
Faculty Offices (Academic)					
Fine Arts					
Chairman		1	120		
Secretary		1	120		
Sub-Total				240	
Art					
Offices		6	80	480	
Music					
Offices		7	80	560	
Speech/Drama					
Offices		2	80	160	
Sub-Total				1,440	
English/Journalism					
Chairman		1	120		
Secretary		1	120	240	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Offices (English)		24	80	1,920	
Office (Journalism)		1	80	80	
Sub-Total				2,240	
Foreign Languages					
Chairman		1	120		
Secretary		1	120	240	
Offices		8	80	640	
Sub-Total				880	
Mathematics/Physics					
Chairman		1	120		
Secretary		1	120	240	
Offices		20	80	1,600	
Sub-Total				1,840	
Life Sciences					
Chairman		1	120		
Secretary		1	120	240	
Offices (Biology)		10	80	800	
Offices (Chemistry)		8	80	640	
Sub-Total				1,680	
Social Sciences					
Chairman		1	120		
Secretary		1	120	240	
Offices		37	80	2,960	
Sub-Total				3,200	
Business Administration					
Chairman		1	120		
Secretary		1	120	240	
Offices		8	80	640	
Sub-Total				880	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Physical Education					
Chairman		1	120		
Secretary		1	120	240	
Offices		11	80	880	
Sub-Total				1,120	
Sub-Total (Academic)				13,280	
Part-Time Faculty					
Offices		4	80	320	
Secretarial Pool Spaces		13	60	780	
Sub-Total				1,100	
Total (Academic)				14,380	
Faculty Lounges (Academic)		3	500	1,500	
Workrooms		3	200	600	
Evening Faculty Office Spaces		3	1,080	3,240	
Sub-Total				5,340	
GRAND TOTAL (ACADEMIC)				19,720	
Faculty Offices (Occupational)					
Food Service					
Assistant Director		1	150		
Secretary		1	150		
Sub-Total				300	
Chairman		1	120		
Secretary		1	120	240	
Offices		6	80	480	
Sub-Total				1,020	
Business & Commerce					
Assistant Director		1	150		
Secretary		1	150	300	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Business Management, Accounting, & Finance					
Chairman		1	120		
Secretary		1	120	240	
Offices		8	80	640	
Sub-Total				880	
Marketing & Distribution					
Chairman		1	120		
Secretary		1	120	240	
Offices		13	80	1,040	
Sub-Total				1,280	
Office Occupations & Secretarial Science					
Chairman		1	120		
Secretary		1	120	240	
Offices		11	80	880	
Sub-Total				1,120	
Home Economics					
Chairman		1	120		
Secretary		1	120	240	
Office		1	80	80	
Sub-Total				320	
Engineering-Related Occupations					
Assistant Director		1	150		
Secretary		1	150	300	
Technical Occupations					
Chairman		1	120		
Secretary		1	120	240	
Offices		13	80	1,040	
Sub-Total				1,280	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Aeronautical Occupations					
Chairman		1	120		
Secretary		1	120	240	
Offices		11	80	880	
Sub-Total				1,120	
Metal Fabrication, Machining, & Related Occupations					
Chairman		1	120		
Secretary		1	120	240	
Offices		8	80	640	
Sub-Total				880	
Automotive					
Chairman		1	120		
Secretary		1	120	240	
Offices		11	80	880	
Sub-Total				1,120	
Total (Occupational)				9,620	
Faculty Lounges (Occupational)		2	500	1,000	
Workrooms		2	200	400	
Evening Faculty Office Spaces		2	1,080	2,160	
Sub-Total				3,560	
GRAND TOTAL (OCCUPATIONAL)				13,180	
GRAND TOTAL (ACADEMIC)				19,720	
				32,900	
Adult General Education					
Offices		10	80	800	
Secretarial Spaces (Combined)		2	80	160	
GRAND TOTAL (ADULT GENERAL EDUCATION)				960	
GRAND TOTAL				42,335	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
IV. STUDENT PERSONNEL SERVICES					
Counseling, Reception & Information Area					
Information Area		1	600	600	
Counseling Offices		15	100	1,500	
Testing/Conference Rooms		2	300	600	
Health Services		6	-	800	
Scholarships, Loan & Placement		1	120	120	
Admissions & Records Office		1	1,200	1,200	
Director of Admissions		1	120	120	
Registrar's Office		1	120	120	
Secretarial Spaces		2	400	800	
Admissions Work Area		1	800	800	
Storage Rooms		2	200	400	
TOTAL				7,060	
V. COLLEGE COMMUNITY CENTER					
Food Service					
Cafeteria		1		8,000	
Student Dining		1		2,000	
Faculty Dining		1		1,500	
Furniture Storage		1		500	
Coffee Shop		1		800	
Sub-Total				12,800	
Lounge/Study					
Main Lounge		1		4,000	
Study Rooms		6	500	3,000	
Sub-Total				7,000	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Activities					
Publications		2		450	
Student Office		1		400	
Conference Workroom		1		500	
Sub-Total				1,350	
Book Store					
Sales Area		1		6,000	
Storage		2		1,000	
Shipping/Receiving		1		500	
Offices		2	120	240	
Sub-Total				7,740	
Recreation					
Billiards/Table Tennis		2		3,500	
Games, Bridge, Checkers, Chess, etc.		1		1,000	
Sub-Total				4,500	
Informational					
Displays		1		200	
Phones		1		100	
Sub-Total				300	
Rest Rooms		6		1,500	
TOTAL				35,190	
VI. INSTRUCTIONAL RESOURCES CENTER					
Spaces					
Curriculum Laboratory		1		1,000	
Offices		6		720	
Reading Areas		-		16,800	
Reference Areas		2		1,500	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Conference Rooms		4		1,200	
Reserve Reading Room		1		1,000	
Stack Space (30,000 books)		-		3,000	
Auxiliary Rooms		-		3,025	
Classrooms		4	600	2,400	
Listening Rooms		-		1,000	
Storage Space, etc.		-		600	
Sub-Total				32,245	
RAMP					
Director's Office		1		150	
Secretary, Cataloger		1		120	
Library		1		300	
Print Shop		1		200	
Model Shop		1		200	
General Production Area		1		400	
Photo Processing Area		1		120	
Photographic Darkroom		1		80	
TV Director's Office		1		150	
TV Studio #1 (12')		1		300	
TV Studio #2 (12')		1		800	
Visitors' Viewing Room		1		120	
Supporting Equipment Room		1		200	
Control Room		1		400	
Storage, Repair & Distribution Area		-		320	
Sub-Total				3,860	
TOTAL				36,105	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
VII. GENERAL CLASSROOMS FOR COLLEGE PARALLEL AND GENERAL EDUCATION					
Seminar Rooms	120	6	400	2,400	
Divisible Classrooms	70	2	800	1,600	
Regular Classrooms	360	12	720	8,640	
Large Classrooms	180	3	1,000	3,000	
Lecture Room	100	1	1,600	1,600	
TOTAL				17,240	
VIII. OCCUPATIONAL ALLIED SUPPORTING FACILITIES					
Seminar Rooms	96	6	280	1,680	
Confrontorium	40	1	850	850	
General Classrooms	160	8	350	2,800	
Data Processing Classroom	25	1	420	420	
General Classrooms	280	8	560	4,480	
General Classroom	40	1	620	620	
TOTAL				10,850	
IX. ADULT GENERAL EDUCATION					
General Classrooms	40	4		2,880	
Seminar Rooms	40	2		800	
Faculty Workroom	-	1		600	
Communications Laboratory (Language)	30	1		800	
Reading/Writing Laboratory	24	1		800	
TOTAL				5,880	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
X. PHYSICAL EDUCATION					
Instructional Area					
Gymnasium	80	1		12,000	
Natatorium	20	1		9,100	
Rooms for Dance & Remedial Programs	40	2	1,000	2,000	
Storage	-	1		150	
Rooms for Gymnastics, Tumbling, etc.	40	2	1,200	2,400	
Storage	-	1		240	
Handball Courts	-	4	1,058	4,232	
Sub-Total				30,122	
Auxiliary Areas					
Men's Dressing & Shower Area	-	2		5,000	
Women's Dressing & Shower Rooms	-	2		2,500	
Faculty Shower & Dressing Area	-	2		800	
Equipment Check-Out & Storage Room	-	1		500	
Laundry & Drying Room	-	1		500	
Storage Rooms	-	4		1,500	
Sub-Total				10,800	
TOTAL				40,922	
XI. TEACHING AND FINE ARTS AUDITORIUM					
Stage & Auxiliary Area	-	1		9,180	
Seating	300-400	1		4,000	
TOTAL				13,180	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
XII. MUSIC					
Combined Music Studios/ Practice Rooms	-	3	120	360	
Practice Rooms	-	5	70	350	
Practice Rooms	-	3	130	390	
Music Classroom	40	1		720	
Electronic Piano Storage	-	1		200	
Instrumental Ensemble Room	100	1		3,000	
Instrumental Storage & Uniform Room	-	1		480	
Choral Ensemble Room	100	1		1,600	
Choral Music Storage & Uniform Room	-	1		200	
Small Ensemble/Classroom	35	1		520	
TOTAL				7,820	
XIII. SPEECH AND DRAMA					
Speech					
Classrooms	50	2	600	1,200	
Speech Clinics	-	2	150	300	
Audiometric Testing Laboratory	-	1		200	
Sub-Total				1,700	
Drama					
Classroom	30	1		600	
Make-Up & Dressing Rooms	-	2	200	400	
Scene Shop	-	1		1,500	
Paint Shop	-	1		1,500	
Property & Storage Room	-	1		1,000	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Costume Shop	-	1		800	
Practice Stage & Seating	25	1		3,250	
Sub-Total				9,050	
TOTAL				10,750	
XIV. ART					
Drawing & Painting Laboratory	20	1		1,700	
Design Laboratory	20	1		750	
Ceramics Laboratory	15	1		800	
Sculpture Laboratory	20	1		800	
Three-Dimensional Art Laboratory	24	1		1,000	
Darkroom	-	1		200	
Printmaking Press Room	-	1		200	
Patio/Art Garden Area	-	1		exterior	
Art Student Locker Area	-	1		420	
TOTAL				5,870	
XV. ENGINEERING TECHNOLOGIES AND RELATED AREAS					
Civil Engineering					
Surveying Instruments & Lecture Room	20	1		600	
Photogrammetry Laboratory	10/20	1		450	
Cylinder Curing & Storage Room	-	1		100	
Plotter Room	-	1		150	
Storeroom	-	1		200	
Sub-Total				1,500	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Mechanical Engineering Technology					
Controls & Servomechanisms	20	1		900	
Refrigeration Laboratory	20	1		1,000	
Metallurgy Laboratory	10/20	1		600	
Electrical Machines Laboratory (With Motor Generator)	20	1		1,000	
Student Study Lounges	-	2		480	
Student Locker Area	-	1		400	
Storage Supporting Instruction	-	4		800	
Water Test Laboratory	10/20	1		400	
Materials Testing Center	30	1		900	
Radiographic Testing Laboratory	-	1		200	
Concrete Cylinder Preparation Laboratory	10/20	1		600	
Asphaltic Materials Testing Laboratory	10/20	1		400	
Soils Testing Laboratory	10/20	1		400	
Sub-Total				8,080	
Drafting & Design					
Drafting Laboratories	80	4	1,250	5,000	
Ozalid Room	-	1		200	
Engineering Drawing Laboratories	60	2	1,600	3,200	
Sub-Total				8,400	
Industrial Engineering					
Motion & Time Study Laboratory	20	1		600	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Pre-Engineering					
Basic Circuits Laboratory	30	1		1,100	
Internal Combustion Engines Laboratory	30	1		1,200	
Sub-Total				2,900	
TOTAL				20,880	
XVI. SCIENCE CENTER					
General Biology Laboratories	64	2	1,000	2,000	
General Biology Preparation & Workrooms	-	2	300	600	
Zoology Laboratory	32	1		1,000	
Zoology Preparation Room	-	1		350	
Botany Laboratory	32	1		1,200	
Botany Preparation & Storage Area	-	1		350	
Physiology & Anatomy Laboratory	32	1		1,200	
Physiology & Anatomy Preparation Area	-	1		300	
Animal Area	-	1		200	
Specimen Area	-	1		200	
General Storage	-	1		800	
Greenhouse	-	1		800	
General Chemistry	64	2	1,200	2,400	
Balance Spaces for General Chemistry	-	2	150	300	
Preparation Areas, General Chemistry	-	3	200	600	
Qualitative Analysis Laboratory	32	1		1,200	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Quantitative & Organic Laboratory	32	1		1,200	
Organic Preparation Area	-	1		150	
Quantitative Analysis Preparation Area	-	1		150	
Quantitative Analysis/ Balance Area	-	1		150	
Instrument Space	-	1		300	
Bulk Chemical Storage Space	-	1		600	
Chemistry Stock Space	-	1		1,500	
Physics Laboratories	64	2	1,200	2,400	
Physics Preparation & Work Areas	-	2	200	400	
General Physics Storage Space	-	1		800	
Photographic Darkroom	-	1		200	
Geology & Astronomy Laboratory	32	1		1,200	
Geology Preparation Area	-	1		150	
Storeroom & Lapidary Workroom/Geology	-	1		450	
Biology Lecture Room	130	1		1,600	
Chemistry Lecture Room	130	1		1,600	
Physics Lecture Room	60	1		1,000	
Work & Preparation Areas for Lecture Rooms	-	3	400	1,200	
All-Purpose Science Laboratory for High School Level	32	1		1,600	
Independent Science Study Laboratory	20	1		1,200	
Instructors' Science Project Room	-	1		2,000	
TOTAL				33,350	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
XVII. BUSINESS AND COMMERCE					
College Parallel--Business Administration					
Accounting Laboratories	72	2	1,000	2,000	
Statistics Laboratory	24/48	1		800	
Sub-Total				2,800	
Office Occupations and Secretarial Science					
Accounting Machines Laboratory	12/24	1		1,100	
Calculations Laboratory	40	1		1,050	
Typing Laboratories	35	3	1,400	4,200	
Advanced Office Practice Laboratory	30	1		1,200	
Duplication & Filing Room	-	1		250	
Student Practice Room	10	1		200	
Sub-Total				8,000	
Business Management, Accounting, & Finance					
Accounting Laboratory	36	1		1,000	
Confrontorium	40	1		850	
Sub-Total				1,850	
Data Processing					
Advanced Programming Laboratory	20	1		400	
Computer Center	-	1		800	
Unit Records Equipment Room	-	1		400	
Key Punch Room	8	1		300	
Card Storage	-	1		100	
Computer Center Director's Office	-	1		150	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Computer Center Reception Area	-	1		120	
College-Computer Coordination Office	-	1		250	
Sub-Total				2,520	
Marketing and Distribution					
Multi-Purpose Activity/ Learning Center	40	1		1,800	
Miscellaneous					
Student Study Lounges	-	3		700	
Faculty Lounge	-	1		400	
Storage Supporting Instruction	-	5		750	
Sub-Total				1,850	
TOTAL				18,820	
XVIII. PERSONAL SERVICES AND RELATED AREAS					
Multi-Purpose Room	18	1		1,200	
Storage	-	1		300	
Food Preparation Room	18	1		400	
Child Care Center	46	1		900	
Observation Classroom	40	1		720	
Quiet Room	-	1		100	
Snack Kitchen	-	1		80	
Children's Toilet	-	1		80	
Isolation Room	-	1		60	
Isolation Toilet	-	1		30	
Outdoor Play Area	-	1		outdoor area	
Pick-Up & Delivery Area	-	1		outdoor area	
Storage Supporting Instruction	-	3		450	
Staff Workroom	-	1		150	
TOTAL				4,470	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
XIX. AUTOMOTIVE, MECHANICAL AND RELATED OCCUPATIONS					
Automotive Shop	15/30	1		3,000	
Storage	-	1		200	
Shower/Locker Area					
Showers	-	-	200		
Dressing Room	-	-	100		
Toilets	-	-	150		
Lockers	-	-	800	1,250	
Heavy-Duty Indoor Shop	15	1		2,400	
Heavy-Duty Outdoor Shop (1,500 square feet covered)	1	1		1,500	
Outside Parking, Driveways (Exterior Area of 10,000 Square Feet)		-		-	
Storage (Heavy-Duty)	-	1		600	
Body Rebuilding Shop	30	1		2,400	
Paint Room	-	1		500	
Storage for Body Rebuilding	-	1		100	
Central Toolroom	-	1		400	
Technical Reference Area	-	1		150	
Student Study Lounge	-	1		200	
Familiarization Class-Laboratory Unit	15	1		700	
Electrical-Carburetion Class-Laboratory Unit	30	1		1,200	
Running Gear Class-Laboratory Unit	15	1		700	
Gasoline Engines Class-Laboratory Unit	30	1		1,000	
Power Transmission Class-Laboratory Unit	15	1		700	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Automatic Transmission Class-Laboratory Unit	15	1		700	
Diesel Engines Laboratory	15	1		1,000	
Diesel Test Laboratories	15	2	300	600	
TOTAL				19,300	
XX. AERONAUTICAL OCCUPATIONS					
Airframe Shop #1	45	1		5,200	
Airframe Shop #2	30	1		2,500	
Power Plant Shop #1	30	1		2,500	
Power Plant Shop #2	45	1		5,200	
Central Supply Storage	-	1		400	
Central Tool & Supply Room	-	1		600	
Dead Storage Area	-	1		1,000	
Engine Test Cells	-	3		1,800	
Hangar	-	1		3,000	
TOTAL				22,200	
XXI. FOOD SERVICES AND RELATED OCCUPATIONS					
Food Services (Other Buildings)					
Coffee Shop (Technology Area)		1		800	
Snack Bar (Business Area)		1		400	
Vending Machines (Administration Area)		1		200	
Snack Bar (Academic Area)		1		400	
Vending Machines (Academic Area)		1		200	
Sub-Total				2,000	

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
Student Center					
Main Kitchen		1		4,800	
Coffee Shop Kitchen		1		800	
Snack Bar Kitchens		2	450	900	
Student Locker Area		1		100	
Storage Supporting Instruction		5		1,100	
Sub-Total				7,700	
TOTAL					9,700
XXII. METAL FABRICATION, MACHINING, AND RELATED OCCUPATIONS					
Machine Shop	60	1		9,000	
Metal Storage	-	1		400	
Testing Laboratory	-	1		400	
Sheet Metal Shop	20	1		3,000	
Metal Storage	-	1		250	
Welding Shop #1	20	1		1,600	
Metal Storage	-	1		600	
Welding Shop #2	60	1		6,900	
Central Tool & Supply Room	-	1		1,500	
Supply Storage	-	1		200	
TOTAL					23,850

XXIII. OCCUPATIONAL EXTENSION

Daytime facilities are to be used for Occupational Extension instruction.

XXIV. APPRENTICE-RELATED

Classrooms	120	4	600	2,400	
TOTAL					2,400

APPENDIX C

Type of Facility (By Chapter)	Student Stations	Number of Units	Amount of Space Per Unit	Total Net Space Needs	Gross Square Feet
XXV. CAMPUS BUILDING OPERATIONS					
Central Supply Room		1	-	3,000	
Receiving Dock		1	-	200	
Decentralized Storage		8 (estimated)		3,200	(in other buildings)
Plant Workshop		1	-	500	
Plant Manager's Office		1	-	150	
Plant Security Office		1	-	150	
Operating Staff Facilities		2	-	400	
Custodial Supply Closets		25 (estimated)	40	1,000	(in other buildings)
Elevators		8 (estimated)	100	800	(in other buildings)
Garage (Four-Stall)		1		800	
Decentralized Men's & Women's Toilets		32	-	7,200	
Utilities Space		-	-	4,000	
TOTAL				21,400	

Grand Total Net Space 409,572

Grand Total Gross (Net x 1.54) 630,741

APPENDIX D

COMMITTEES

1. GENERAL PLANNING CONCEPTS

Dr. C. W. McGuffey, Executive Director, Associated Consultants in Education, Inc.

Dr. Ed. K. Erickson
Mr. Ken Aldrich
Mr. John Blake
Mr. C. A. Bradley
Mr. Charles Carpenter
Mr. Dale Goss
Mr. Alf Lair

Mr. Ralph Burkhard, Architect

2. SITE PLANNING AND DEVELOPMENT

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3. ADMINISTRATIVE FACILITIES

Dr. C. C. Colvert, Consultant

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Mr. Ken Aldrich
Mr. Joe Berling
Mr. Charles Carpenter
Mr. William K. Toomey
Dr. James Warren

4. INSTRUCTIONAL RESOURCES CENTER

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Mr. Ron Ames
Mr. John Blake
Mr. Charles Carpenter
Mr. Francis Denton

5. PHYSICAL EDUCATION FACILITIES

Dr. Ray Schultz, Consultant

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Mr. Larry Blake
Mr. Jerry Brockey
Mr. William Haroldson
Mr. Morris Storseth

APPENDIX D

6. STUDENT PERSONNEL SERVICES FACILITIES

Dr. Grant Morrison, Consultant

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Mrs. H. Berthiaume
Mr. Larry Blake
Mr. Alf Lair
Mr. Robert Logue
Mr. Don Smith
Mr. William K. Toomey

7. TEACHING AND FINE ARTS AUDITORIUM

Dr. Arnold Tjomsland, Consultant

Mr. Ken Aldrich
Mr. John Constantine
Mr. Wallace Goleeke
Mr. Ben Hallgrimson
Mr. Marvin Hartley
Mr. James Kriley
Mr. Jack Schaeffer
Mr. Don Smith
Dr. James Warren

8. FACULTY OFFICES

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Mr. Jerry Brockey
Mr. Charles Carpenter
Mr. Glen Jackson
Mr. Henry Mar
Mrs. Frances Prindle

9. COLLEGE COMMUNITY CENTER

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Mr. Ken Aldrich
Mrs. Helen Feutz
Mr. Vince Galvin
Mr. Alf Lair
Dr. Paul Menig

10. ART FACILITIES

Mr. Alan Jones, Consultant

Mr. Ken Aldrich
Mr. John Constantine
Mr. Ray Gerring
Mr. Henry Petterson
Mr. Don Smith

11. SPEECH AND DRAMA FACILITIES

Dr. Arnold Tjomsland, Consultant

Mr. Ken Aldrich
Mr. Ben Hallgrimson
Mr. James Kriley
Mr. Wendell Phillips
Mr. Don Smith
Dr. James Warren

APPENDIX D

12. SCIENCE FACILITIES

Dr. C. W. McGuffey, Consultant

Mr. Ken Aldrich
Mr. Ron Ames
Mr. Larry Blake
Dr. Duane Chapman

13. MUSIC FACILITIES

Mr. Alan Jones, Consultant

Mr. Ken Aldrich
Mr. Wallace Goleeke
Mr. Ben Hallgrimson
Mr. Jack Schaeffer
Mr. Don Smith

14. OCCUPATIONAL ALLIED SUPPORTING FACILITIES

Dr. Jesse Defore, Consultant

Mr. Ken Aldrich
Mr. Ron Ames
Mr. Larry Blake
Mr. Al Small

15. GENERAL PURPOSE CLASSROOMS

Dr. James Wattenbarger, Consultant

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Mr. John Blake
Mr. Larry Blake
Mr. Charles Carpenter
Mr. Henry Mar
Mr. Al Small

16. ADULT GENERAL EDUCATION FACILITIES

Dr. Ray Schultz, Consultant

Mr. Ken Aldrich
Mr. John Blake
Mrs. Frances Prindle
Mr. Don Smith
Mr. Les Warner

17. FOOD SERVICES AND RELATED OCCUPATIONS FACILITIES

Dr. Jesse Defore, Consultant

Mr. Ken Aldrich
Mr. Ron Ames
Mr. Vince Galvin

18. BUSINESS MANAGEMENT, ACCOUNTING, AND FINANCE FACILITIES

Dr. Jesse Defore, Consultant

Mr. Ken Aldrich
Mr. Paul Askland
Mr. Larry Blake
Mr. Ray Haines
Mr. Marvin Hartley
Mr. Al Small
Mr. Don Smith

APPENDIX D

19. OFFICE OCCUPATIONS AND SECRETARIAL SCIENCE FACILITIES

Dr. Jesse Defore, Consultant

Mr. Ken Aldrich
Mr. Ron Ames
Mr. Larry Blake
Mr. Al Small
Mr. Don Smith

20. MARKETING AND DISTRIBUTION FACILITIES

Dr. Jesse Defore, Consultant

Mr. Ken Aldrich
Mr. Larry Blake
Mrs. Beth Durr
Mr. Al Small
Mr. Don Smith
Mr. Ron Ames

21. PERSONAL SERVICES AND RELATED OCCUPATIONS FACILITIES

Dr. Jesse Defore, Consultant

Mr. Ken Aldrich
Mr. Ron Ames
Mr. Larry Blake
Mr. Mil Forwood
Mrs. Leona Hassenmiller
Mrs. Frances Prindle
Mr. Don Smith
Mrs. Kathleen Stuart

22. OTHER SEMI-PROFESSIONAL OCCUPATIONS FACILITIES

Dr. Jesse Defore, Consultant

Mr. Ken Aldrich
Mr. Ron Ames
Mr. Larry Blake
Mr. George Graff

23. ELECTRICAL AND ELECTRONICS OCCUPATIONS FACILITIES

Dr. Jesse Defore, Consultant

Mr. Ken Aldrich
Mr. Ron Ames
Mr. Nick Foster
Mr. George Graff
Mr. Al Luhn
Mr. Art Siegal

24. AERONAUTICAL OCCUPATIONS FACILITIES (Mechanics and Related Including Aeronautical Technology)

Dr. Edward Hankin, Consultant

Mr. Ken Aldrich
Mr. Paul Benson
Mr. Darrell Clark
Mr. I. E. Jespersen
Mr. Art McGovern
Mr. Robert Rowe

25. METAL FABRICATION, MACHINING, AND RELATED OCCUPATIONS FACILITIES (Including Mechanical and Engineering Technology)

Dr. Edward Hankin, Consultant

Mr. Ken Aldrich
Mr. George Graff
Mr. LaVerne Lewis
Mr. Paul Longthorp

26. CAMPUS BUILDING OPERATIONS FACILITIES

Dr. C. W. McGuffey, Consultant

Mr. Ken Aldrich
Mr. Harry Dial
Mr. Walt Larsen
Mr. Charles O'Toole
Mr. Bob Sills

27. AUTOMOTIVE, MECHANICAL AND RELATED OCCUPATIONS FACILITIES

Dr. Jesse Defore, Consultant

Mr. Ken Aldrich
Mr. Ron Ames
Mr. Paul Benson
Mr. Glen Jackson
Mr. Earle Wakefield

28. APPRENTICE-RELATED FACILITIES

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Mr. Dick Hutchinson
Mr. Glen Jackson
Mr. I. E. Jespersen
Mr. Harold Pelton

29. OCCUPATIONAL EXTENSION FACILITIES (Supplemental)

Dr. Edward Hankin, Consultant

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Mr. Paul Benson
Mr. George Graff
Mr. Marvin Hartley
Mr. I. E. Jespersen
Mr. Toivo Korpela
Mr. Harold Pelton
Mr. Al Small